ORDER NO. TSD-7808-321

Service Manual

FM/AM/FM STEREO RADIO WITH FM "SENSOR TOUCH" PRESET TUNING SYSTEM, DOLBY* NOISE REDUCTION SYSTEM, CASSETTE TAPE DECK AND RECORD PLAYER

Compact Stereo

SG-5090/(M)

SG-5090/(M)

Specifications

GERMANY Hi Fi DIN 45500

DOLBY SYSTEM

* Dolby is the trade mark of Dolby Laboratories Inc.

AMPLIFIER SECTION

Power Output	MPO 2 × 45W (THD 1%, 4 ohms) RMS 2 × 35W (THD 1%, 4 ohms) One Channel Driven RMS 2 × 30W (THD 1%, 4 ohms) Both Channel Driven
Frequency Response	10 Hz ~ 30 kHz ±1.5 dB (DIN)
Power Band Width	10 Hz ~ 30 kHz −3 dB (DIN)
Input Sensitivity and Impedance:	
Phono	3 mV, 47k ohms
Mic	1 mV, 3k ohms
Tape	200 mV, 60k ohms
Rec Out and Impedance	DIN: 30 mV, 68k ohms
Tone Controls:	
Bass	±15 dB at 50 Hz
Treble	±15 dB at 15 kHz
High Filter	−6 dB/oct. from 7 kHz
Loudness Control	+9 dB at 100 Hz (Volume at −30 dB position)

FM TUNER SECTION

Tuning System	Varactor Diode with "Sensor Touch" 6 pre-selectors and 1 manual tuning
Frequency Range	87.5 MHz ~ 108 MHz
Intermediate Frequency (IF)	10.7 MHz
Sensitivity	2.0 μV (IHF) 2.0 μV (S/N 26 dB Mod. 40 kHz) (DIN)
Image Ratio	46 dB (98 MHz)
Signal/Noise Ratio	65 dB (at 1 kHz, 60 dB, 40 kHz)
Distortion	Mono: 0.15% (at 1 kHz, 60 dB, 40 kHz) Stereo: 0.3% (at 1 kHz, 60 dB, 40 kHz)
Stereo Separation	45 dB (at 1 kHz, 60 dB, 40 kHz) ≧ 35 dB: 250 Hz ~ 6.3 kHz (60 dB, 40 kHz) (DIN) ≧ 35 dB: 6.3 kHz ~ 12.5 kHz (60 dB, 40 kHz) (DIN)
Selectivity	72 dB (at 1 kHz, 40 dB, 40 kHz)

AM TUNER SECTION

Frequency Range	MW: 525 ~ 1605 kHz (572 ~ 187m) LW: 145 ~ 350 kHz (2070 ~ 857m) SW: 5.9 ~ 18 MHz (50.8 ~ 16.7m)
Intermediate Frequency (IF)	455 kHz
Sensitivity	MW: 100 μV/m (1 MHz) LW: 250 μV/m (240 kHz) SW: 8 μV (12 MHz)
Image Ratio	MW: 45 dB (1 MHz) LW: 45 dB (240 kHz) SW: 20 dB (12 MHz)

RECORD PLAYER SECTION

Player System	Direct-Drive, Automatic Return
Turntable	30 cm (12") Aluminum Die Cast
Turntable Speeds	33-1/3 and 45 rpm, 2-speed with pitch controls and stroboscope
Wow and Flutter	0.06% (WRMS), ±0.1% (DIN WTD)
Deviation of Turntable Speeds	+1.5%, −1.0%, (DIN)
Cartridge	Moving Magnet Type (EPC270CX)
Stylus	Diamond (EPS270ED)
Stylus Pressure	1.5 ~ 2.0g
Frequency Response	20 Hz ~ 20 kHz (DIN)
Separation	23 dB (DIN)
Signal/Noise Ratio	65 dB (DIN)

TAPE DECK SECTION

Deck System	Full Automatic Shut Off and Pause Control
Track System	4-Track, 2-Channel
Recording System	AC Bias (50 kHz) with Dolby NR System
Erasing System	AC Erase (50 kHz)
Tape Speed	4.75 cm/sec. (1-7/8 i.p.s.)
Frequency Response	20 Hz ~ 15 kHz (Normal) 22 Hz ~ 16 kHz (Fe-Cr) 20 Hz ~ 16 kHz (CrO_2)
Signal/Noise Ratio	Dolby NR − Output: Normal 53 dB (DIN) Fe-Cr 55 dB (DIN) CrO_2 55 dB (DIN) Dolby NR − Input: Normal 60 dB (DIN) [10 dB more improved at more than 5 kHz] Fe-Cr 63 dB (DIN) CrO_2 63 dB (DIN)
Erase Ratio	70 dB (DIN)
Channel Separation	44.5 dB (DIN)
Crosstalk	75 dB (DIN)
Wow and Flutter	0.1% (WRMS), ±0.16% (DIN)

POWER CONSUMPTION 220W

POWER SUPPLY ..... AC 110V, 120V, 220V, 240V, 50/60 Hz

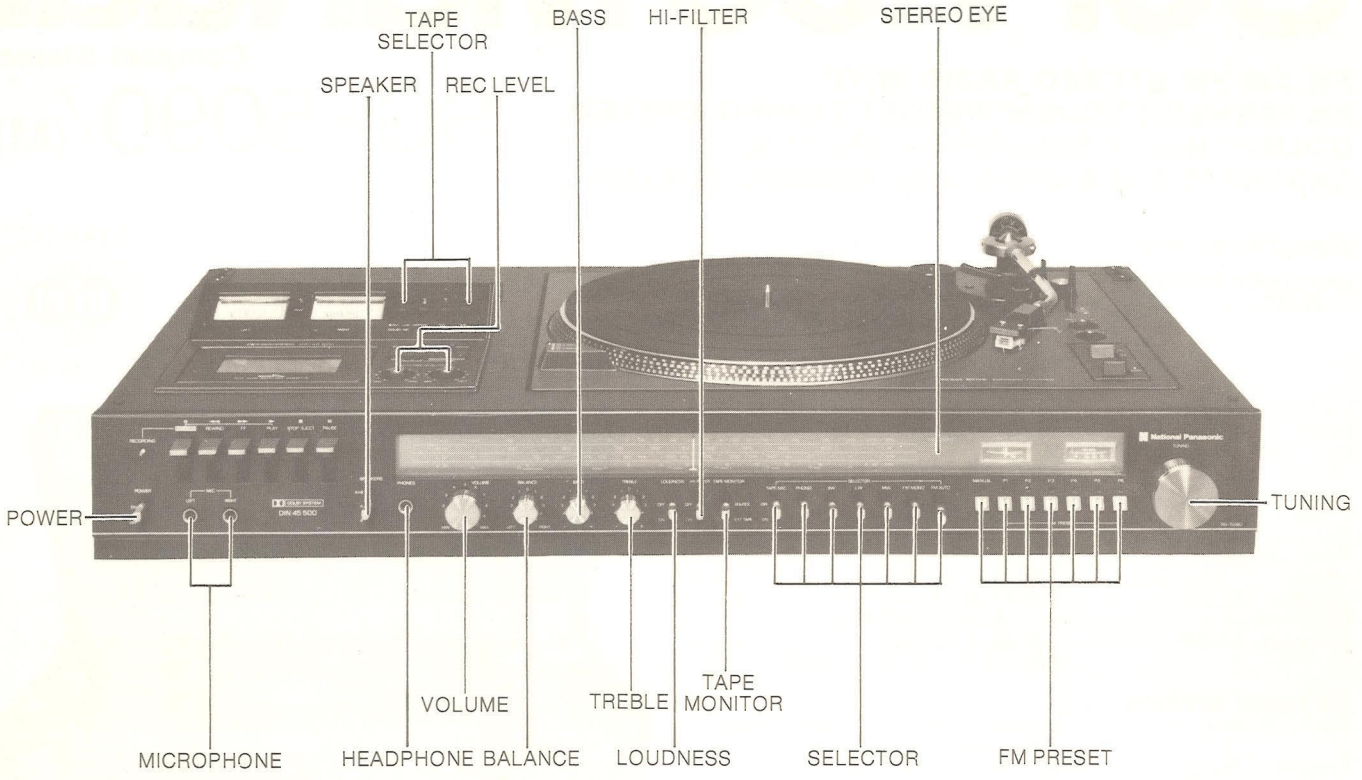
DIMENSIONS (W × H × D)
Center Unit ..... 742 mm × 172 mm × 449 mm

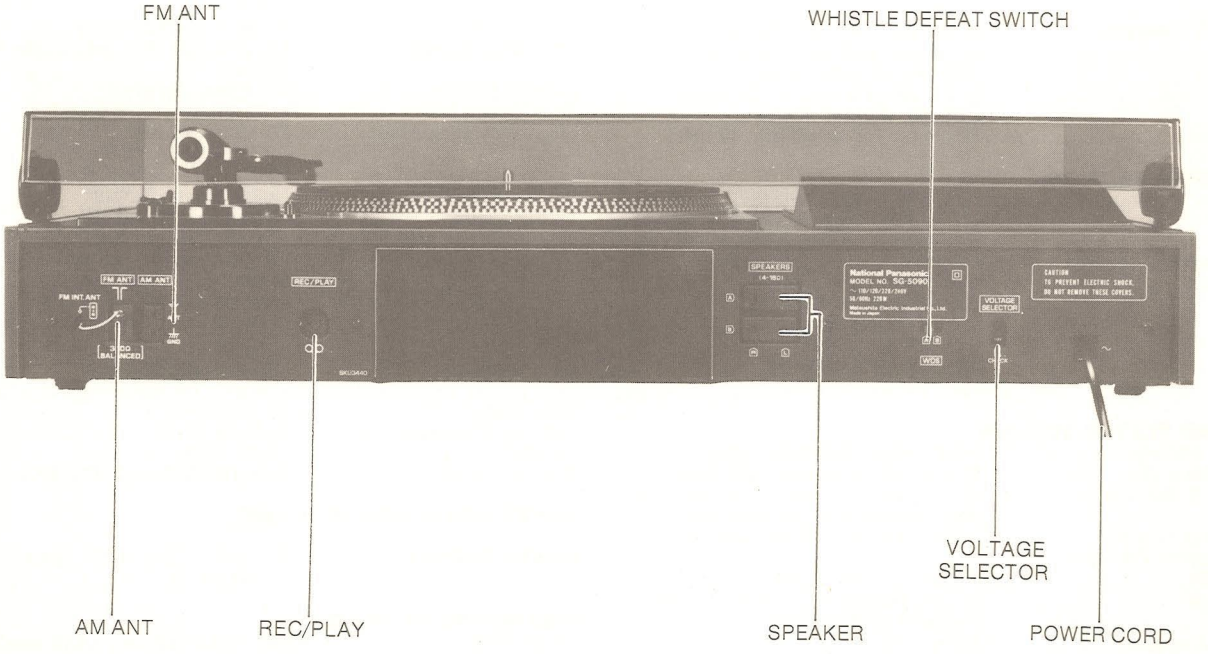
WEIGHT
Center Unit ..... 18.4 kg

* Specifications are subject to change without notice for further impr

National Panasonic

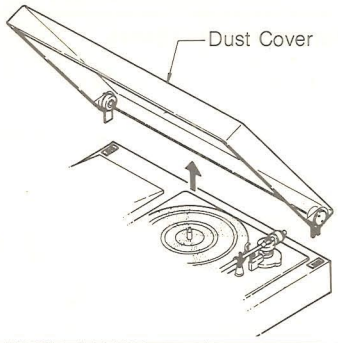
LOCATION OF CONTROLS



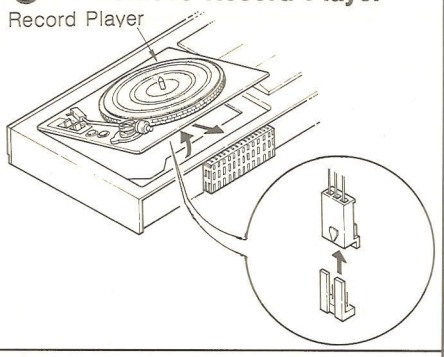


DISASSEMBLY INSTRUCTIONS

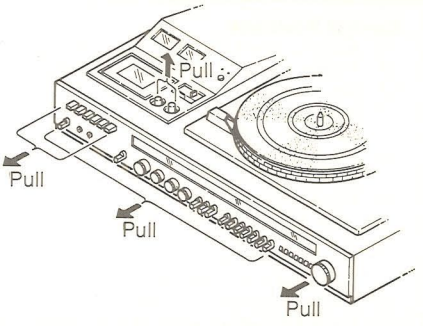
❶ To Remove Dust Cover



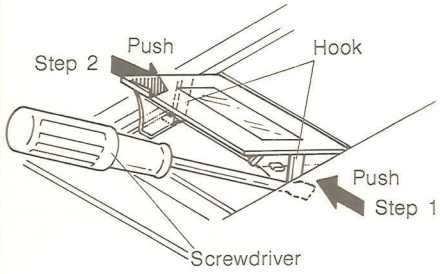
❷ To Remove Record Player



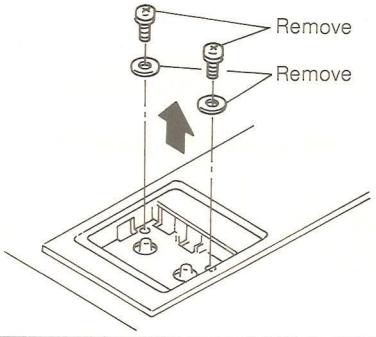
❸ To Remove Knobs



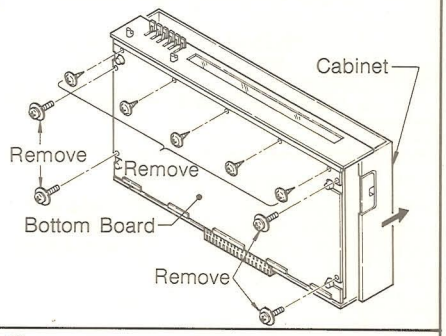
❹ To Remove Cassette Lid



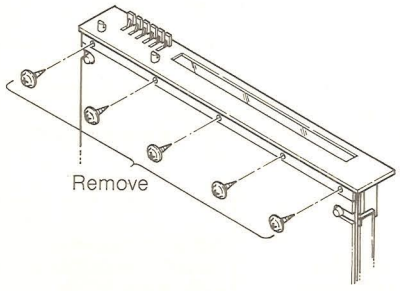
❺ To Remove Screws



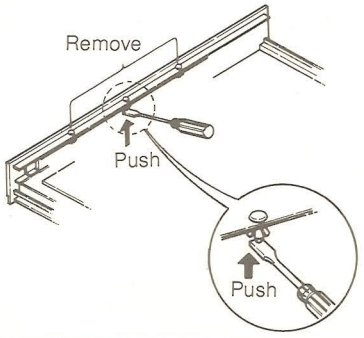
❻ To Remove Screws



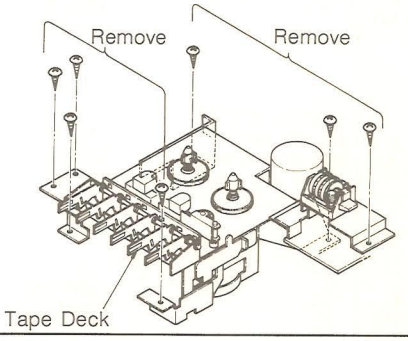
❼ To Remove Screws



❽ To Remove Latch



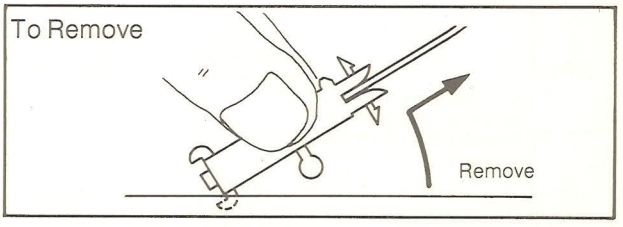
❾ To Remove Screws



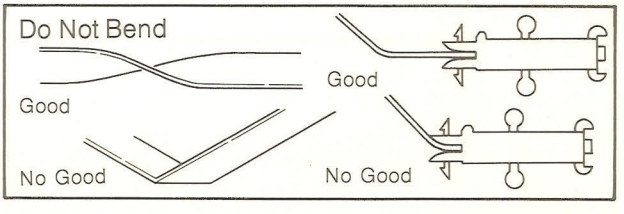
- **To Remove Cabinet** ..... Refer to ❶ ~ ❻.
- **To Remove Escutcheon** ..... Refer to ❶ ~ ❽.
- **To Remove Tape Deck** ..... Refer to ❶ ~ ❾.

SERVICING AID

- **To Remove Remote Wire Assembly**
  Lift remote wire assembly upward by pushing the lower portion of plastic hook with a suitable screwdriver.



- **Note for Handling of Remote Wire Assembly**
  When servicing remote wire assembly, be sure to hold it gently. Do not bend sharply.
  Before lifting the cassette deck (or circuit board), be sure to remove remote wire assembly carefully to prevent it from being damaged.



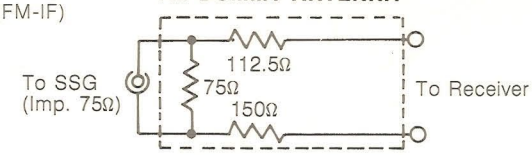
ALIGNMENT INSTRUCTIONS (RADIO)–1

■ AM Alignment

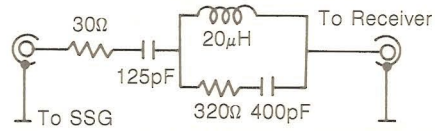
Control Positions:

1. Volume Control..... Maximum (AM-IF and RF, FM-RF); Minimum (FM-IF)
2. Treble Control..... Center
3. Bass Control..... Center
4. Balance Control..... Center
5. Function Selector..... LW, MW, SW, FM MONO and FM AUTO
6. Power Switch..... ON
7. FM Preset..... MANUAL, P1, P2, P3, P4, P5 and P6.
8. Loudness..... OFF
9. High Filter Selector..... OFF
10. Muting Switch..... OFF
11. FM Preset Volume (VR101~VR106)... Turn them fully counterclockwise.
12. Preset Volume (VR108~VR112)..... Turn set to the center point.
13. Output of signal generator should be no higher than necessary to obtain output reading.
14. Make certain that speaker system is connected to the receiver when aligning. (or use 4Ω dummy load resistors.)

FM DUMMY ANTENNA



SW DUMMY ANTENNA



STEP	SIGNAL GENERATOR or SWEEP GENERATOR		RADIO DIAL SETTING	INDICATOR (VTVM or SCOPE)	ADJUST	REMARKS
	CONNECTION	FREQUENCY				
AM-IF AND RF ALIGNMENT						
1	Fashion loop of several turns of wire and radiate signal into loop of receiver.	455 kHz 30% Mod. with 400 Hz	Point of non-interference (on/about 600 kHz)	Output meter across speaker jack (L). (Imp. 4Ω)	T201 (AM 1st IFT) T202 (AM CFT) T203 (AM DET)	Adjust for maximum output.
2 (LW)		145 kHz 30% Mod. with 400 Hz	145 kHz (15.44 mm)		L202 (LW ANT Coil) L205 (LW OSC Coil)	Adjust for maximum output by sliding coil L202 along ferrite core.
3 (LW)		350 kHz 30% Mod. with 400 Hz	350 kHz (201.13 mm)		CT202 (LW ANT Trimmer) CT205 (LW OSC Trimmer)	Adjust for maximum output. Repeat steps (2) and (3).
4 (MW)		550 kHz 30% Mod. with 400 Hz	550 kHz (21.83 mm)		L201 (MW ANT Coil) L204 (MW OSC Coil)	Adjust for maximum output by sliding coil L201 along ferrite core.
5 (MW)		1500 kHz 30% Mod. with 400 Hz	1500 kHz (196.72 mm)		CT201 (MW ANT Trimmer) CT204 (MW OSC Trimmer)	Adjust for maximum output. Repeat steps (4) and (5).
6 (SW)	Connect to EXT. antenna and ground through SW Dummy antenna.	5.9 MHz 30% Mod. with 400 Hz	5.9 MHz (15.64 mm)		L203 (SW ANT Coil) L206 (SW OSC Coil)	Adjust for maximum output.
7 (SW)		18 MHz 30% Mod. with 400 Hz	18 MHz (172.30 mm)		CT203 (SW ANT Trimmer) CT206 (SW OSC Trimmer)	Adjust for maximum output. Repeat steps (6) and (7).

ALIGNMENT INSTRUCTIONS (RADIO)–2

■ FM Alignment

STEP	SIGNAL GENERATOR		RADIO DIAL SETTING	INDICATOR (VTVM or SCOPE)	FM PRESET BUTTON	ADJUST	REMARKS
	CONNECTION	FREQUENCY					
FM-IF AND RF ALIGNMENT							
1	No connection	No signal	Point of non-interference	Tuning meter of Receiver.	MANUAL	T204-A (Orange core) (Disc IFT)	Adjust for center position of tuning meter.
2	Connect to EXT. FM Antenna terminal through dummy antenna.	106 MHz 30% Mod. with 400 Hz	106 MHz (191.21 mm)	Output meter across speaker jack (L) (Imp. 4Ω)	MANUAL	VR108	Adjust for maximum output.
3					P1	VR101	Adjust for maximum output.
4				FM dial meter		VR109	Adjust for 106 MHz indication reading on meter.
5		87.4 MHz 30% Mod. with 400 Hz	Turn them fully counter-clockwise.	Output meter across speaker jack (L) (Imp. 4Ω)	MANUAL	VR110	Adjust for maximum output.
6					P1	VR111	Adjust for maximum output. Repeat steps (2),(5) and (6).
Notes: 1. **FM Tuner is pre-aligned. Do not touch it.** 2. **To correct the drift of FM band coverage (87.5 ~ 108 MHz), adjust VR101, VR108, VR109, VR110, VR111.**							
FM MONO DISTORTION ALIGNMENT							
1	Connect to EXT. FM antenna terminal through dummy antenna.	98 MHz (60 dB) 100% Mod. with 400 Hz	98 MHz	Distortion meter to speaker jack (L).	.....	T204-B (Green core) (Disc IFT)	Adjust for minimum distortion meter indication
FM MUTING LEVEL ALIGNMENT							
1	Connect to EXT. FM antenna terminal through dummy antenna.	98 MHz (22 dB) 100% Mod. with 400 Hz	98 MHz	Output meter to speaker jack (L).	.....	VR201	• FM AUTO position. • Turn fully clockwise. • Adjust to that output can be obtained.

■ FM Stereo Alignment

Control Positions:
Volume Control ..... Audible level of speaker sound.
Treble Control ..... MIN
Function Selector ..... FM AUTO
FM Preset Button..... MANUAL
Others ..... Same as AM Alignment.

EQUIPMENT CONNECTION	ADJUST	REMARKS
Connect frequency counter to TP301 and TP202 (ground) at 98 MHz, 30% modulation with 60 dB input.	VR301	Adjust VR301 for 19 kHz ± 50 Hz on frequency counter reading.

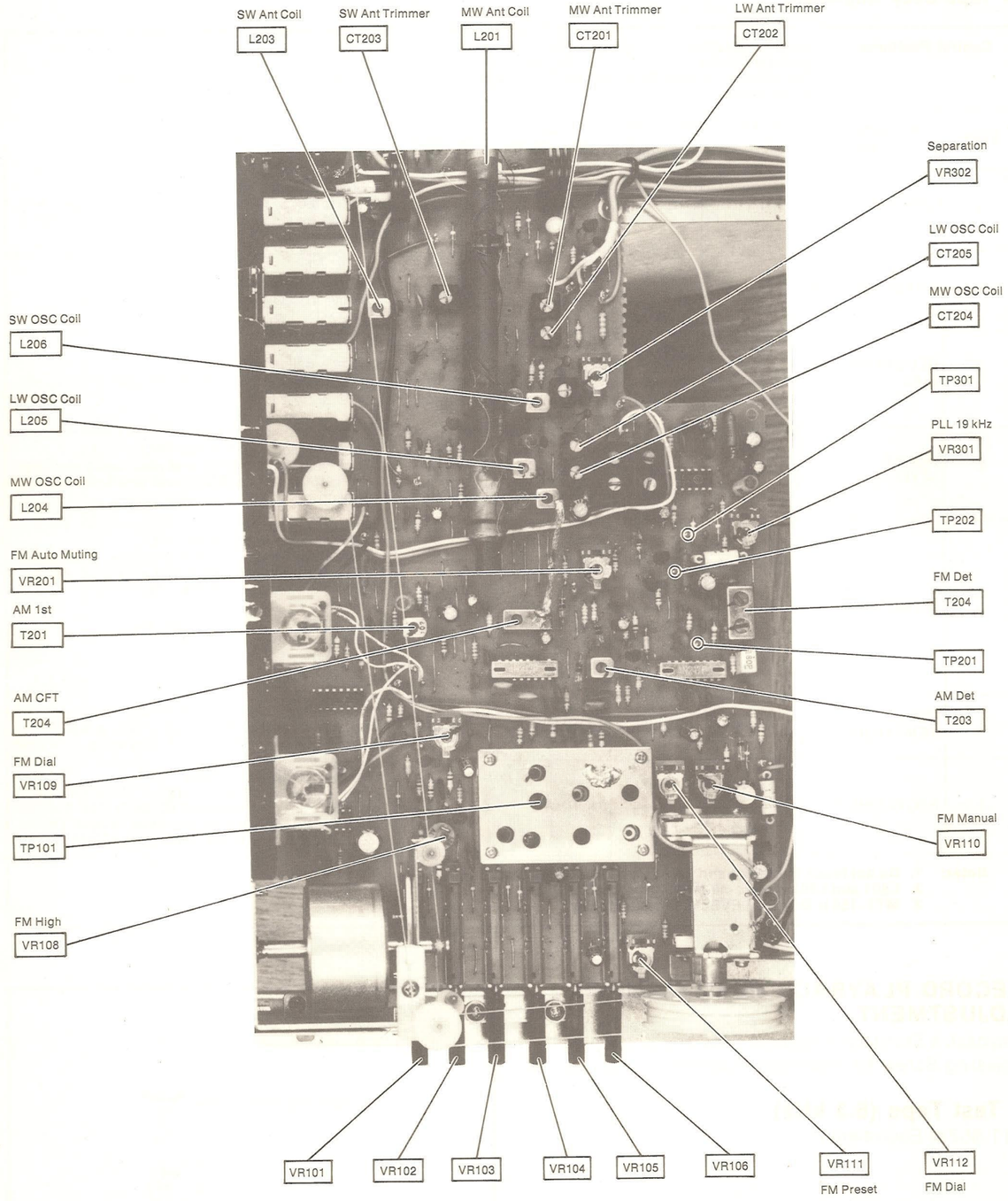
SEPARATION ALIGNMENT

Control Positions:
1. Stereo Modulator: Connect Stereo Modulator to EXT. Mod. terminal of signal generator.
2. Signal Generator: Modulation Rate of 19 kHz Pilot Signal 10%
   Modulation Rate of Right and Left Signal 27%
   Output Level..... 60 dB
3. Tuner (Balance Control): Adjust balance control so that output level from both channels becomes equal.

EQUIPMENT CONNECTION			ADJUST	REMARKS
SIGNAL GENERATOR	VTVM	OSCILLOSCOPE		
Connect to EXT. FM antenna terminal through dummy antenna.	Connect across speaker jack. (Imp. 4Ω).	Connect vertical amp. input of scope to terminals of VTVM.	VR302 (Separation (Control)	Adjust VR302 for minimum indication of VTVM from the left side output when the right side of stereo modulator is modulated. Adjust VR302 in the same way for the right side. Adjust for best balance between "L to R" and "R to L" separation.

Note: When aligning separation, disconnect frequency counter.

ALIGNMENT POINTS (RADIO)



ALIGNMENT INSTRUCTIONS (TAPE DECK)

■ Tape Deck Alignment

Control Positions:
1. Function Selector ..... TAPE
2. Balance Control..... Center
3. Depress push buttons PLAY and REC at the same time. (Be sure to release the record safety lever manually.)
4. Dolby Switch ..... OUT

STEP	ALIGNMENT ITEM	VTVM CONNECTION		TAPE SELECTOR	ADJUST	REMARKS
		Positive	Negative			
1	OSCILLATOR COIL	TP801	TP802	NORMAL	L805	• Whistle defeat switch to "A". • Adjust L805 for max. reading on VTVM, and should be within 0.5(V) when the Whistle Defeat Switch is "B".
2	ERASE VOLTAGE			CrO_2	VR803	• Whistle defeat switch to "A" or "B". • Adjust VR803 for 12V reading on VTVM.
3	RECORDING BIAS	TP401	TP403	NORMAL	VR801	• Whistle defeat switch to "A". • Adjust VR801 and VR802 for 3.2mV ± 0.1mV reading on VTVM.
		TP402	TP403		VR802	
4	DOLBY LEVEL	TP803	TP403	NORMAL	VR401	• Tape monitor switch to SOURCE. • Turn Dolby switch to IN and playback a test tape (MTT-150). Adjust VR401 and VR402 for 580mV reading on VTVM.
		TP804	TP403		VR402	
5	VU METER	.....	.....	NORMAL	VR405 VR406	• Tape monitor switch to SOURCE; • Turn Dolby switch IN and playback a test tape (MTT-150). Adjust VR405 and VR406 so that needle dle rests at +**3 dB** (□□ mark).
6	PEAK INDICATOR	TP404	TP405	NORMAL	VR409	• Tape monitor switch to SOURCE. • Turn Dolby switch IN and playback a test tape. Adjust VR409 for DC 1V ± 0.1V reading on VTVM.
7	REC CURRENT	TP401	TP403	NORMAL	VR407	• Connect TP801 to TP802. • Turn Dolby switch to IN. Apply 1 kHz audio signal to REC/PLAY terminal and set body REC Volume at +**3 dB** (□□ mark) on VU meter. Adjust VR407 and VR408 for 0.6 mV reading on VTVM.
		TP402	TP403		VR408	

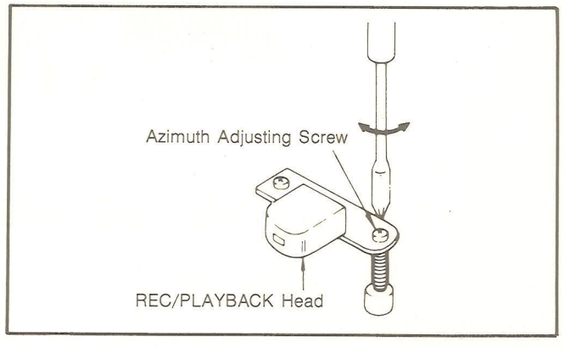
Notes:
1. **Do not touch R/P Head and Erase Head when aligning.**
2. **L801 and L802 are pre-aligned. Do not touch them.**
3. **MTT-150 is DOLBY LEVEL calibration tape.**

RECORD/PLAYBACK HEAD AZIMUTH ADJUSTMENT

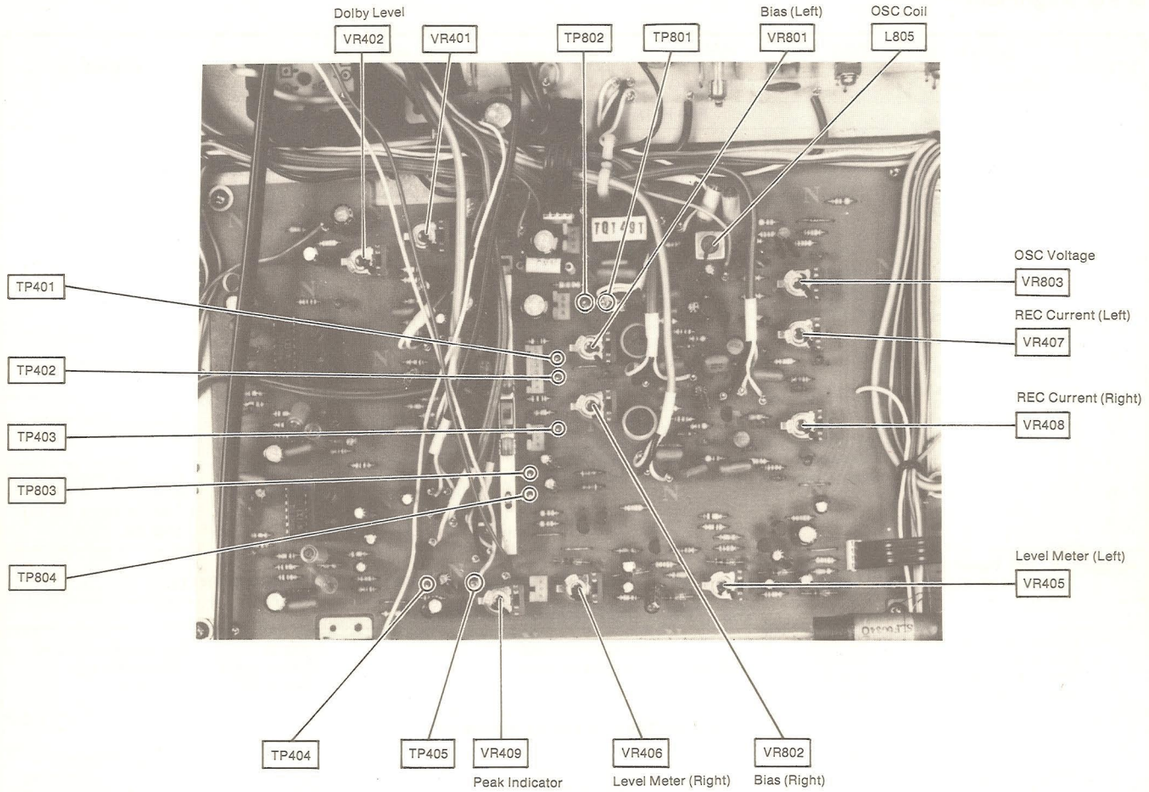
Playback a Standard Alignment Tape and turn Azimuth Adjusting Screw for maximum loudness.

*** Test Tape (6.3 kHz)**

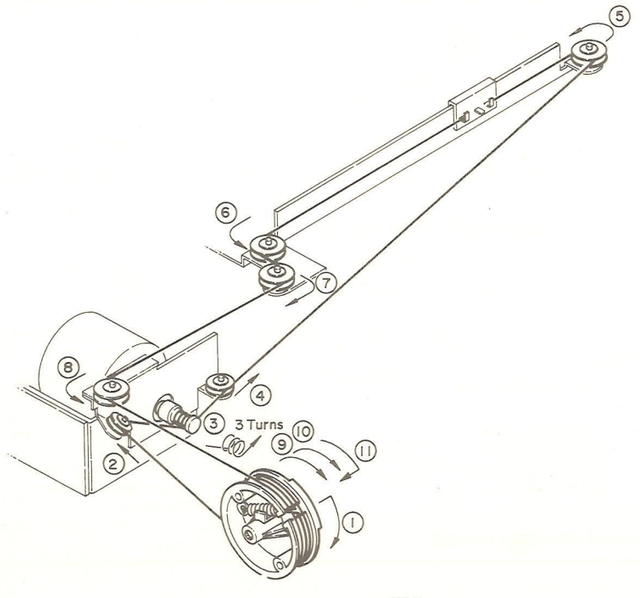
VTT-652 or Equivalent



ALIGNMENT POINTS (CASSETTE TAPE DECK)



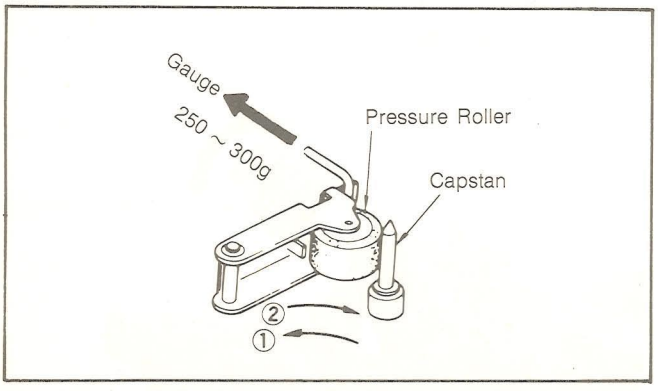
DIAL CORD STRINGING GUIDE



MECHANICAL ADJUSTMENT OF CASSETTE TAPE DECK

PRESSURE ROLLER ADJUSTMENT

1. Switch set to PLAY. (Do not insert cassette.)
2. Hook gauge to arm of pressure roller.

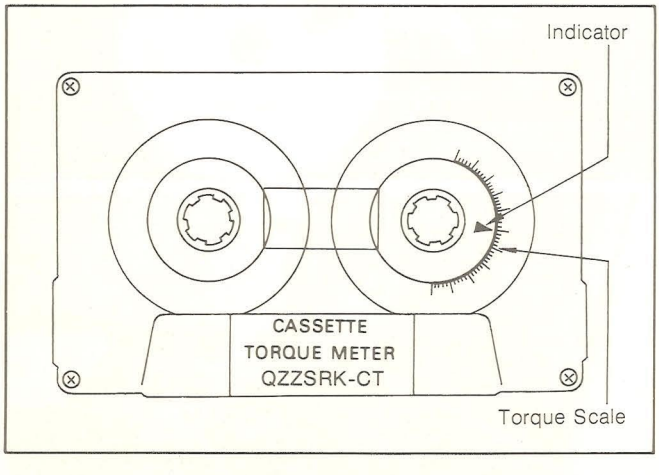


3. Pull pressure roller away from the capstan in the direction of arrow 1 with spring gauge and slowly permit the pressure roller to return toward capstan in the direction of arrow 2.
4. Measure tension at time when pressure roller makes contact with capstan (or when pressure roller starts rotating.)
5. The standard tension of pressure roller should be 250 ~ 380g.
6. If pressure is not within these limits;
   Clean the rubber roller and capstan with a soft cloth moistened with alcohol or replace pressure spring.

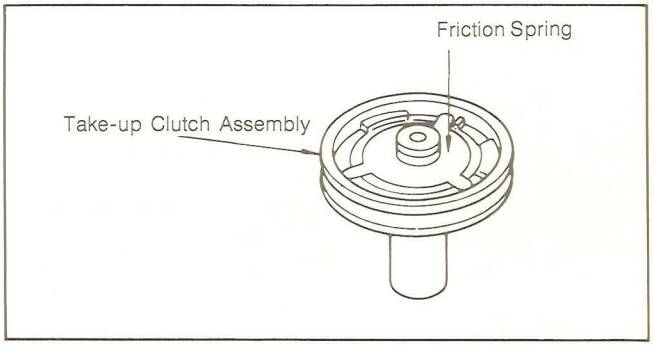
TAKE-UP TORQUE ADJUSTMENT

* Test Tape: QZZSRK-CT (Take-up Torque Meter)

1. Insert test tape.
2. Rewind the tape to its starting point.
3. Switch set to PLAY.
4. Read "▶" mark of indicator on take-up side.

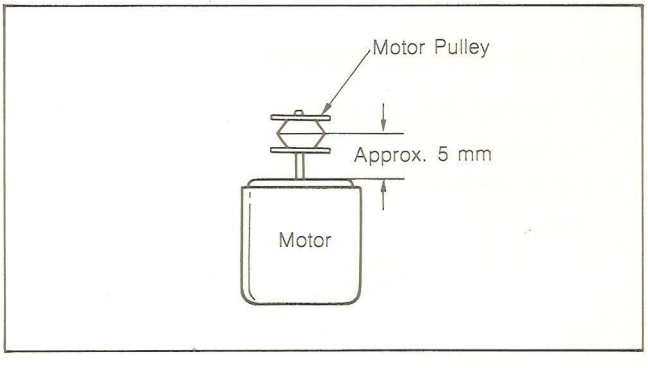


5. Repeat PLAY-STOP several times and read the average tension.
6. The standard take-up tension should be 30 ~ 70 g.cm. If take-up tension is not within these limits;
   a) Clean main belt, take-up reel and all parts which contact them with a cotton swab moistened with alcohol, and/or
   b) Switch set to "OFF", remove main belt and make sure that take-up reel and take-up clutch are rotating smoothly.
   c) Change take-up clutch tension by turning the friction spring under reel table, and/or
   d) Replace take-up clutch.



MOTOR PULLEY ADJUSTMENT

When replacing the motor, adjust the clearance between motor and motor pulley as in figure below.

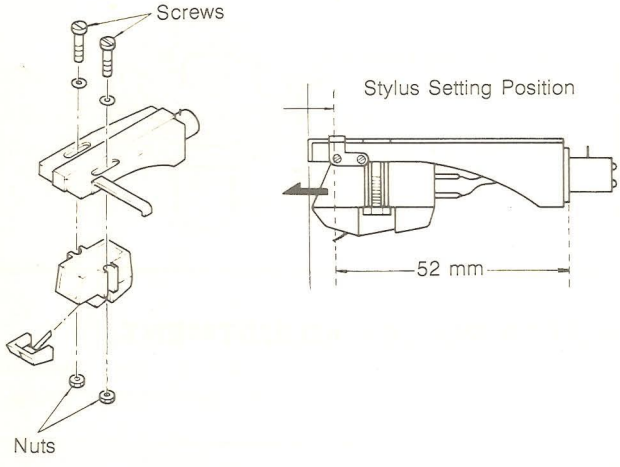


SERVICING THE RECORD PLAYER

CARTRIDGE REPLACEMENT

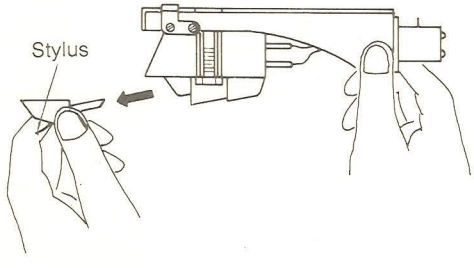
1. Remove the headshell fixing nut by turning it clockwise and remove headshell from pickup arm.
2. Remove cartridge from headshell by removing the two screws and disconnecting the lead wires from cartridge.
3. Using the two nuts attached, mount a new cartridge onto headshell so that the cartridge is perpendicular to the disc surface.
4. Install headshell to pickup arm.

Note:
Correct stylus position can be obtained by relocating the cartridge.



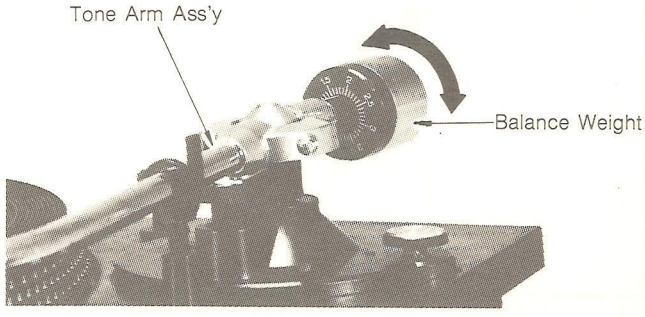
STYLUS REPLACEMENT

1. Lift pickup arm to a position that will make the stylus accessible.
2. Gently remove worn stylus and replace it with a new one.



STYLUS PRESSURE ADJUSTMENT

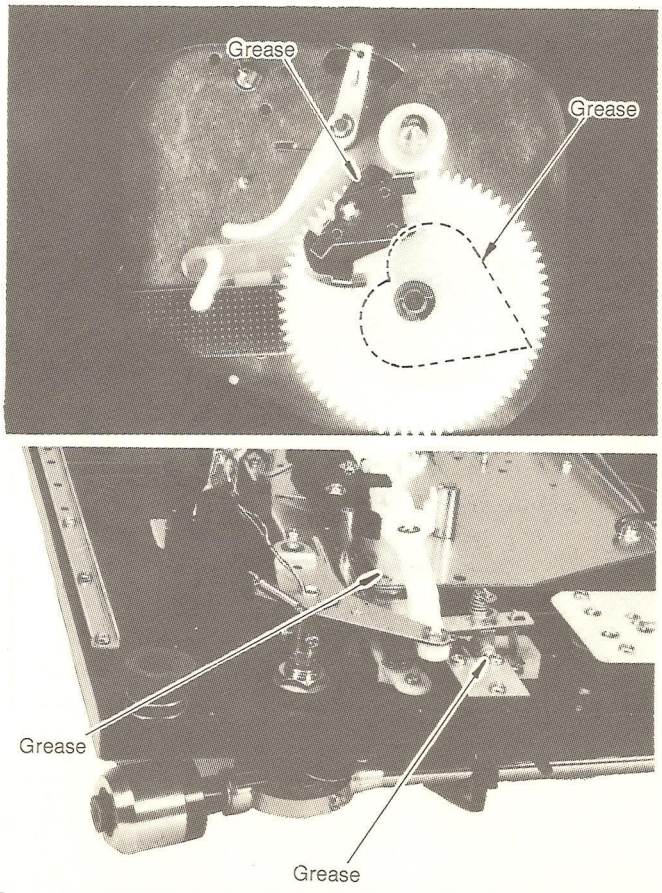
1. Release pickup arm from its seated position. Place a record on the turntable. Then, balance the pickup arm by turning in or out the balance weight until the stylus is leveled to the surface of the record (as viewed from the turntable unit side).
2. Set the stylus pressure dial to "0", and since the specified stylus pressure of the cartridge is 2.0 grams, set the balance weight dial to "2" by turning the weight counterclockwise (as viewed from the front panel side).



LUBRICATION

The record player has been thoroughly lubricated at the factory and under normal use should not be required additional lubrication. When replacing some parts, however, it may be necessary to lubricate the parts as specified.

Note:
Do not allow grease to touch motor pulley, belt and turntable.



DOLBY NOISE REDUCTION SYSTEM–1

GENERAL DESCRIPTION

The Dolby B-Type Noise Reduction System is used in this equipment. It reduces the level of background noise, normally introduced during tape recordings without changing the frequency response of the audio signal.

METHOD OF DOLBY SYSTEM

Signal deviation of Dolby System is shown in **Fig. 1**.
Fig. 1 shows the Record (Encoding) and Playback (Decoding) characteristics for a signal of about 5 kHz at different signal levels.
For example, following a level in **Fig. 1**.

1. When −30 dB REC signal is applied.
   It is boosted to −20 dB and recorded on a magnetic tape. [ENCODED or COMPRESSED]
2. Playing back this recorded tape (at −20 dB).
   The output signal is attenuated by the Dolby System and reproduced at −30 dB, the same level as recorded. [DECODED or EXPANDED]

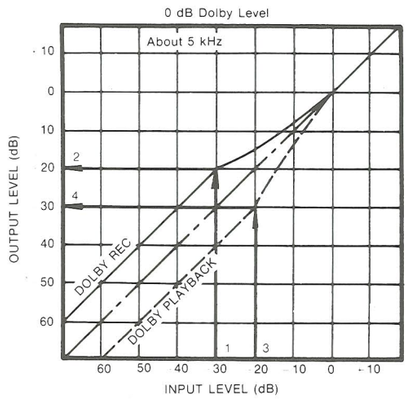


FIG. 1

Fig. 2 shows the boosting characteristics of the frequencies for different signal levels.

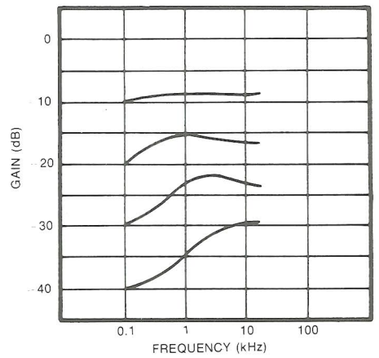


FIG. 2

Fig. 3 shows the general boosting vs. attenuation characteristics for record and playback with the resulting overall Record Playback response.
The point at which the Record and Playback curve flattens out the 0 dB level and it is called the Dolby Level.
The Dolby level corresponds to a level at which the magnetic flux density of the signal recorded on tape is 200 pwb/mm and is indicated by +3 dB on the VU meter of this unit.

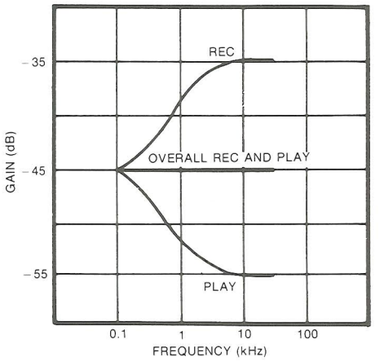


FIG. 3

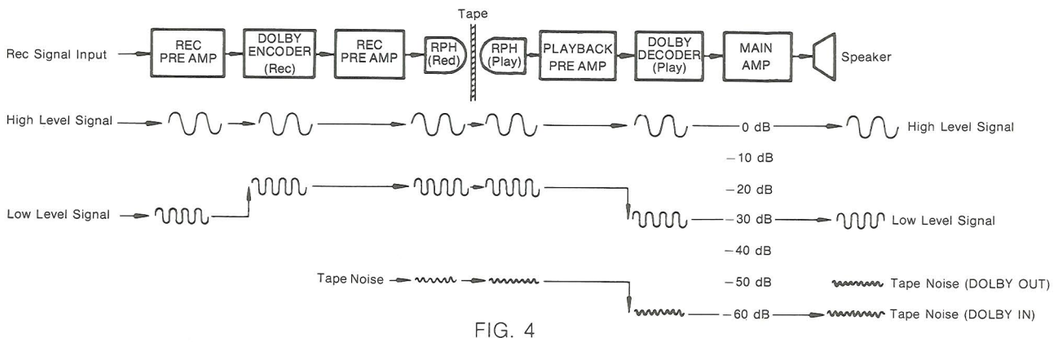


FIG. 4

DOLBY NOISE REDUCTION SYSTEM–2

PRINCIPLE OF NOISE REDUCTION

Much of the audible noise is a hiss noise in the medium and high frequencies created during the recording process on magnetic tape, while some of the noise is playback amplifier noise.
At high input levels the noise is suppressed, however, at low input signal levels the Signal to Noise Ratio (S/N) decreases and the noise is heard.
The Dolby System in this unit is designed to solve this problem by boosting the low level mid and high frequencies by about 10 dB during recording (compressing) and attenuating (expanding) the same signals during playback by an equal amount, as shown in **Fig. 4**.

The amount of boost/attenuation depends on the level and the frequency of the signal.
Fig. 5 shows the noise reduction with Dolby "IN" vs. Dolby "OUT".

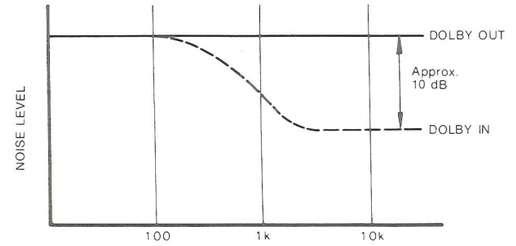
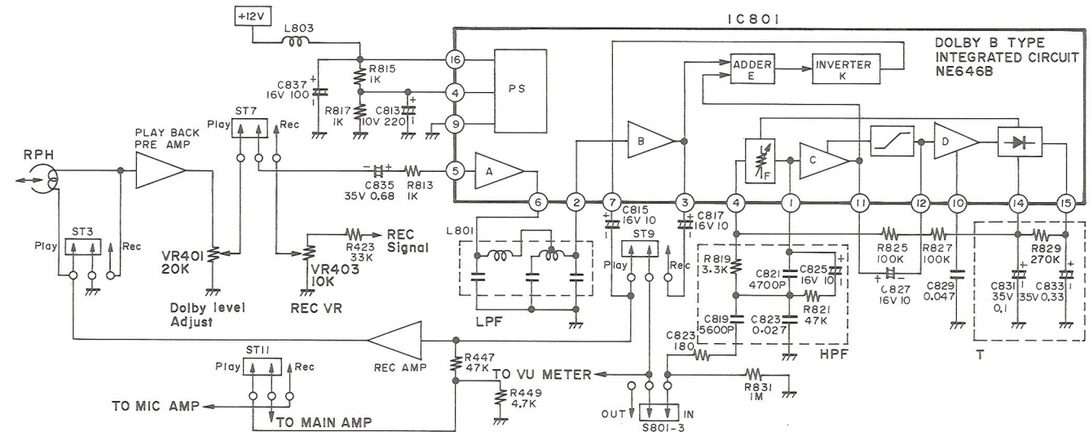


FIG. 5

CIRCUIT OPERATION

The operation of the Noise Reduction System is shown in the Block Diagram of **Fig. 6**. By turning the Rec/Play switch to Record or Play and the Dolby In/Out switch to IN this circuit operates either in the Encode or Decode mode, as follows:
[ENCODE]: ST3, ST7, ST11 and ST9 in RECORD position.
The recording signal is applied to the REC AMP and passes through AMP "A" of the Dolby IC and the low-pass-filter (LPF), and enters AMP "B" the LPF attenuates unwanted frequencies such as tape recorder bias of FM MPX sub. carrier signals to the level which will not influence the Dolby circuit operation. The output signal of AMP "B" is divided into two paths; one is directly supplied to ADDER "E", and is called a direct signal, while the other controls the noise reduction signal. This signal, passing through ST9, S801-3, high-pass-filter (HPF), variable resistance "F" and AMP "C", enters ADDER "E" and increases the direct signal.
As a result the REC signal from INVERTER "K" is boosted.

[DECODE]: Essentially the same circuitry.
ST3, ST7, ST11 and ST9 in PLAY position.
The playback signal from the playback head (RPH) is applied to PLAYBACK PRE AMP and passes through ST7, AMP "A" of the Dolby IC, "LPF" and AMP "B", and then it enters ADDER "E" as the direct signal. One part of output signal from INVERTER "K", passing through ST8, is supplied to the MAIN AMP, and the other, as Noise Reduction Signal, passes through S801-3, "HPF".
Variable Resistance "F" and AMP "C", are applied to ADDER "E" in opposite phase. As a result, the level of the playback signal is attenuated. This circuit operates to boost at REC position [ENCODE] and to attenuate at PLAY position [DECODE].
"G" is the rectifying and smoothing circuit of Noise Reduction Signal and controls Variable Resistance "F". And "F" and "HPF" compose the dynamic high pass filter, and control the boosting and attenuating degree of high and medium frequency in response to the signal level (**Fig. 2** and **Fig. 3**). "T" is the circuit setting the response time of Dolby.



FM "SENSOR" TOUCH PRESET TUNING SYSTEM

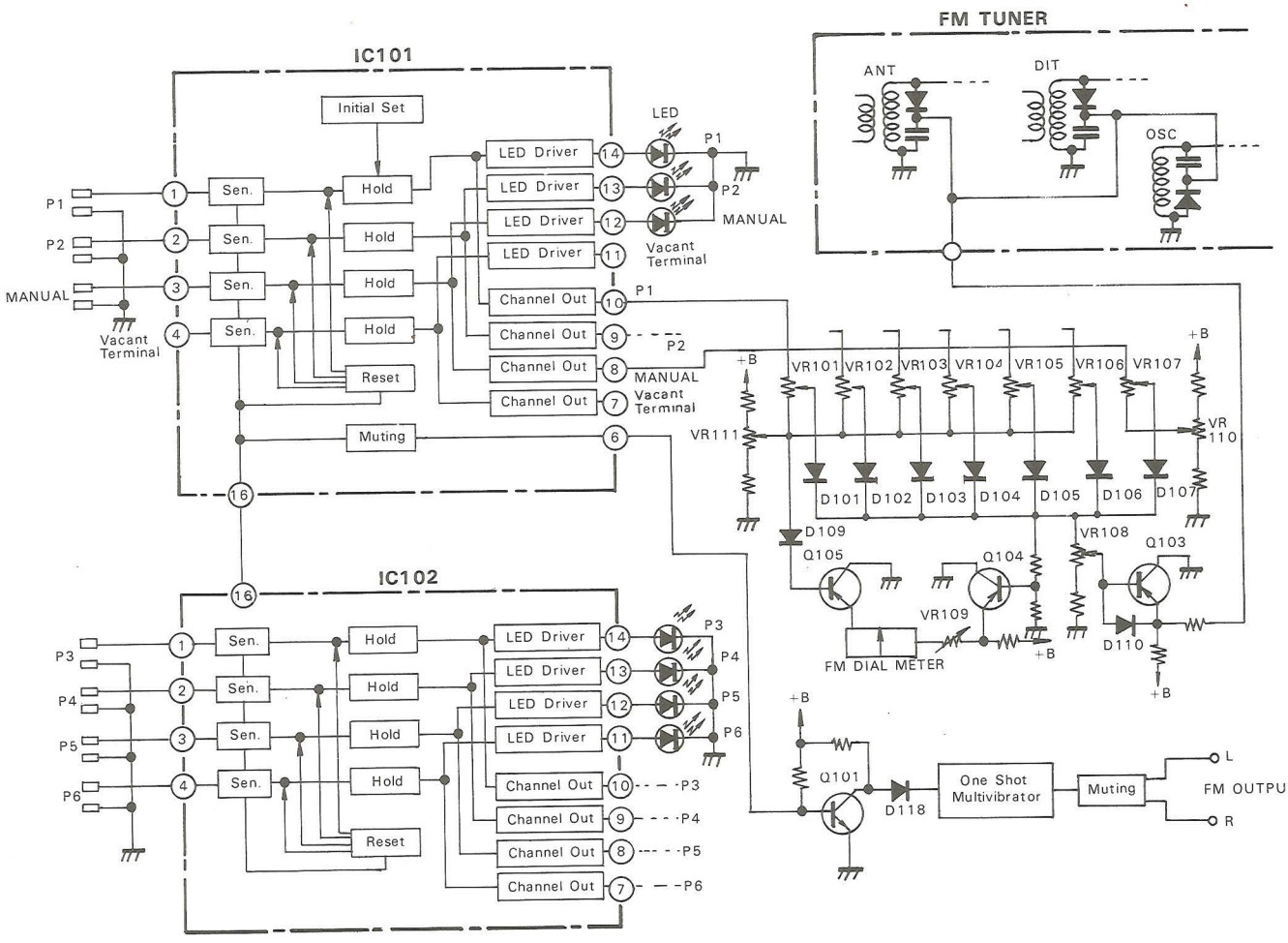
GENERAL DESCRIPTION

The FM "Sensor Touch" Preset Tuning System of the equipment is designed for an easy soft touch selection of six stations.
This system is composed of an electronic tuning circuit equipped with varactor diodes and sensing driver circuit using two integrated circuits, IC101 SN94041 and IC102 SN94042.

CIRCUIT OPERATION

The operation of FM "Sensor Touch" Preset Tuning System.
IC101 SN94041 operates to select the station for MANUAL, P1 and P2, and IC102 SN94042 is for P4, P5, P6 and P7.

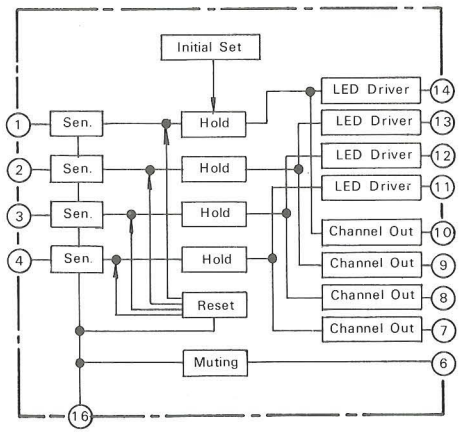
When the sensor button of P1 is touched with a finger, the detecting circuit of P1 operates to energize LED driver and channel out circuit and then a LED lights. While applying voltage that is adjusted by VR101 to the varactor diode of the electronic tuning circuit, the station is selected.
Muting circuit enables to decrease selection noise when selecting channels, by flowing the signal from No. 6 pin of IC101 to Q101.
Hold circuit and reset circuit are provided to lock the selected station when releasing the finger.
Initial Set circuit of IC101 operates to tune the station of turned ON again after turning OFF.



IC BLOCK DIAGRAM

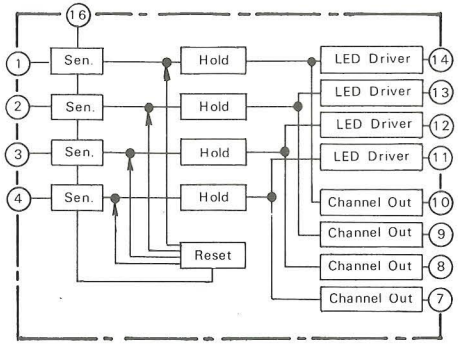
IC101

SN94041N



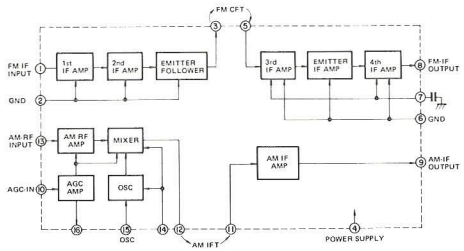
IC102

SN94042N



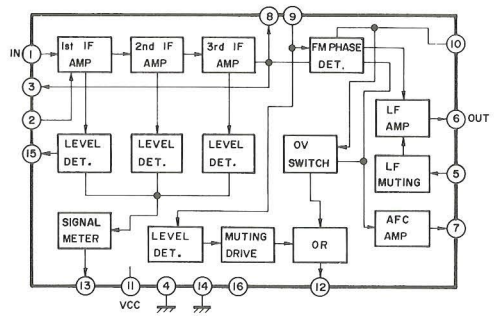
IC201

AN217



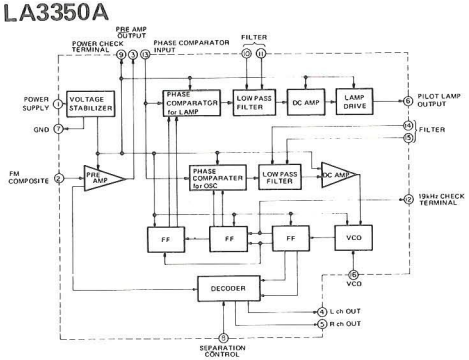
IC202

AN377



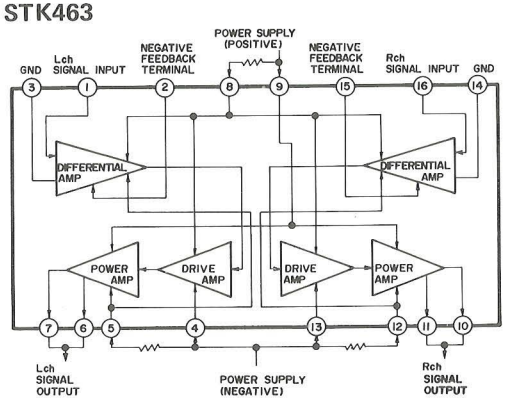
IC301

LA3350A



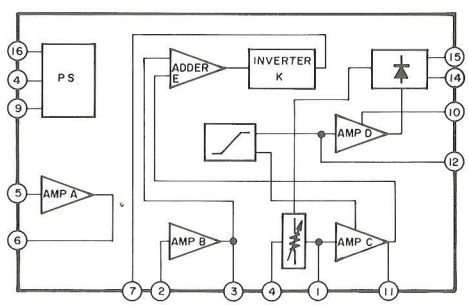
IC701

STK463



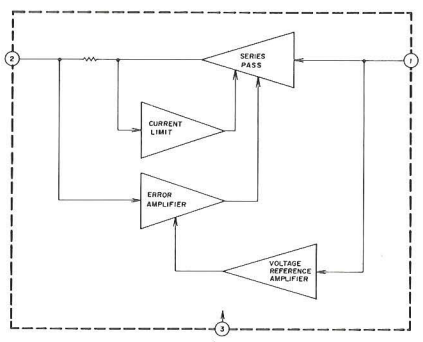
IC801, 802

NE646B



IC901, 902

UPC78L12



WIRING DIAG

IC701															
PIN NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
VOLTAGE	-0,08V	-0,08V	0V	-1,3V	-26,7V	0V	0V	-25,2V	-26,7V	0V	0V	-26,7V	-1,3V	0V	-0,08V	-0,08V

IC901			
PIN NO.	1	2	3
VOLTAGE	17,0V	12,3V	0V

Q801	
E	1,35V
C	10,9V
B	1,49V
Ic	30mA

Q802	
E	0,62V
C	10,9V
B	1,49V
Ic	30mA

IC102			
PIN NO.	VOLTAGE	PIN NO.	VOLTAGE
1	10,8V	9	3,0V
2	10,8V	10	3,0V
3	10,8V	11	0V
4	10,8V	12	0V
5	0V	13	0V
6	0V	14	0V
7	3,0V	15	12,2V
8	3,0V	16	6,5V

Q601, 602	
E	0,12V
C	1,29V
B	0,65V
Ic	

Q603, 604	
E	0,67V
C	4,59V
B	1,29V
Ic	

Q903	
E	18,05V
C	27,2V
B	18,7V
Ic	

Q902	
E	18,6V
C	28,0V
B	19,0V
Ic	

Q901	
E	11,6V
C	17,0V
B	12,3V
Ic	

IC201		
PIN NO.	FM	AM
1	0V	0V
2	0V	0V
3	0V	0V
4	6,5V	7,5V
5	1,1V	1,1V
6	0V	0V
7	1,1V	1,1V
8	6,3V	7,2V
9	0,9V	8,4V
10	0,9V	1,5V
11	0,8V	0,8V
12	0,9V	8,4V
13	0,6V	0,7V
14	0,9V	1,5V
15	0,9V	8,4V
16	0,6V	0,7V

IC202		
PIN NO.	MONO	AUTO
1	2,1V	2,1V
2	2,1V	2,1V
3	2,1V	2,1V
4	0V	0V
5	0V	0V
6	6,2V	5,7V
7	5,7V	5,7V
8	5,7V	5,7V
9	5,7V	5,7V
10	5,7V	5,7V
11	10,8V	10,8V
12	0,7V	0,7V
13	1,5V	1,5V
14	0V	0V
15	4,9V	4,9V
16	0V	0V

Q204	
E	0V
C	0V
B	0,6V
Ic	

Q202	
E	0V
C	8,4V
B	
Ic	

Q103	
E	
C	
B	
Ic	

Q101	
E	0V
C	0,04V
B	0,7V
Ic	

IC921			
PIN NO.	1	2	3
VOLTAGE	17,6V	12,2V	0V

Q201	
E	0V
C	12,0V
B	0V
Ic	

Q301	
E	0V
C	2,1V
B	0,1V
Ic	

Q806	
E	0V
C	0,1V
B	0,7V
Ic	

Q805	
E	0V
C	17,8V
B	0,1V
Ic	

Q807, 808	
E	0V
C	
B	0,04V
Ic	

Q203	
E	3,5V
C	8,4V
B	4,1V
Ic	

IC101	
PIN NO.	VOLTAGE
1	10,8V
2	10,8V
3	10,8V
4	10,8V
5	0V
6	0,7V
7	0V
8	2,3V
9	3,0V
10	11,4V
11	0V
12	0V
13	0V
14	11,4V
15	12,2V
16	6,5V

Q104	
E	
C	
B	
Ic	

Q105	
E	
C	
B	
Ic	

Q102	
E	0V
C	0,02V
B	0,7V
Ic	

FM ANT
AM ANT
P3
DIN CONNECTOR
P7
Black To P1-16
Violet To P1-20
Sky Blue To P1-14
White To P1-15
White To P8-1
Red To P8-2
To P8-3
Red To P8-6
White To P8-5
To P8-13
Red To P8-12
White To P8-11
To POWER TRANSFORMER -SECONDARY
Yellow To POWER TRANSFORMER -SECONDARY
To P1-44
To POWER TRANSFORMER -SECONDARY
Brown
Yellow To P1-43
To POWER TRANSFORMER -SECONDARY
Brown
White
To Pilot Lamp
To P1-13 Orange
To P8-10 Orange
To P1-26 Blue
To Pilot Lamp White
Red To P1-8
Red To P1-6
White To P1-5
To P1-7
Black To P6-17
Black To P3-38
White To P3-35
Sky Blue To P3-36
Orange To P6-21
MC8
Brown
Pink
White
Gray
To P9-MC8
R/P HEAD
MC7
To P9-MC7
ERASE HEAD
Red To P17-6
White To P17-5
PLUNGER
TAPE MOTOR SWITCH
S3
Brown To P17-3
Yellow
Blue To P17-4
To P17-5
TAPE PLAYBACK SWITCH
S4
Sky Blue To P17-2
Blue To MC6-3
TAPE PAUSE SWITCH
S5
To P17-1
Pink
To P9-MC2
To P12-8 Orange
To P12-1
To P12-3
To P12-7
To P12-5 White
To P12-6 Red
To P12-2
To P12-4
Yellow To S7
Orange To S7
Red To P2-4
To P2-3
White To P2-1
Red To P2-2
White To P4-34
Red To P4-33
Yellow To P6-32
To P6-28 Black
White
Blue
To P6-19
To P6-18
DIAL LAMP
TUNING LAMP
Sky Blue To FM DIAL-⊕
Black To FM DIAL-⊖
To P1-10 White
To P1-9 Red
Black
SF1~7 FUNCTION SELECTOR SWITCH
Orange To P1-V.C Terminal 1
Sky Blue To P1-V.C Terminal 2
Yellow
Black
TUNING METER
Black
Sky Blue
To P1-28
To P1-29
FM DIAL
Violet To P3-37
S501 TAPE/SOURCE SELECTOR SWITCH
Red To P7-3
Red To P7-4
White To P7-5
Red To P7-2
White To P7-1
To P7-3
FM TUNER
P1
P5
P4
P8
MC1
MC2
MC4
MC5
MC11
IC701
IC902
IC901
IC921
IC202
IC301
IC201
IC101
IC102
F902 1AT
F901 2.5AT
F903 5AT
F904 5AT
S501-1
S501-2
S502-1
S502-2
S503-2
S804

* This diagram might be modified without notice for further development of technology.

G DIAGRAM

Q802	
E	0.62V
C	10.9V
B	1.49V
Ic	30mA

Q401,402	
E	0.01V
C	1.15V
B	0.54V
Ic	

Q403,404	
E	0.58V
C	6.03V
B	1.15V
Ic	

IC801, 802

PIN NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
VOLTAGE	6.5V	6.7V	7.2V	6.6V	6.6V	6.6V	6.1V	—	0V	6.6V	6.6V	6.6V	—	5.7V	5.0V	12.9V

Q409,410	
E	3.51V
C	10.3V
B	4.11V
Ic	

Q407, 408	
E	0V
C	0.1V
B	0.27V
Ic	

Q405,406	
E	1.47V
C	6.24V
B	2.14V
Ic	

Q411,412	
E	0.36V
C	3.33V
B	0.96V
Ic	

Q413	
E	0V
C	11.33V
B	0V
Ic	

Q809	
E	0V
C	0.04V
B	0.66V
Ic	

Q803	
E	0V
C	0.09V
B	0.72V
Ic	

Q804	
E	0V
C	11.5V
B	0.09V
Ic	

Q501,502	
E	1.12V
C	6.78V
B	1.7V
Ic	

Q503,504	
E	10.85V
C	17.16V
B	11.45V
Ic	

Q505,506	
E	1.99V
C	7.76V
B	2.56V
Ic	

Q507,508	
E	0.13V
C	5.35V
B	0.78V
Ic	

Q509,510	
E	8.82V
C	17.4V
B	9.45V
Ic	

Q511,512	
E	8.55V
C	0V
B	7.89V
Ic	

P18 F1 2AT

Yellow → To S2-P
Orange
Blue → To POWER TRANSFORMER-PRIMARY
Sky Blue → To S1-5
Brown → To S1-6

WHISTLE DEFEAT SWITCH S802

P14 S802-2 S802-1

To P9-3
White → To P9-2
Red → To P9-4
White → To P9-5
To P9-6

POWER VOLTAGE SELECTOR SWITCH S2

Yellow → To P18-1
Orange
Brown
Red
Blue → To P18-4
White

Power Cord
To S1-1
To S1-2

P15 D407
Blue → To P9-34
Yellow → To P9-38

PLAYER
MC1 → To P6-MC1
MC3 → To P2-MC3

CASSETTE MOTOR
To P17-7
To P17-6

PRIMARY POWER TRANSFORMER SECONDARY

To P6-7 Yellow
To P6-8 Yellow
To P6-9 Brown
To P6-10 Brown
To P6-12 Black
To P6-13 Blue
To P6-14 Blue

D804 D805 D806 D807
J1 J2 J3 J4 J5
P13

P6
To P1-27 White
Black → To P8-14
Black → To P8-4
To P15-1 Blue
To P15-2 Yellow

ST1~12 REC/PLAY SELECTOR SWITCH

White → To P14-1
White → To P14-2
Red → To P14-3
White → To P14-4
Black → To P16-1
Black → To P12-18
Red → To P12-17
Black → To P16-2
Red → To P10-4

P12
To P9-8 Red
To P9-7 Black
Red → To P9-17
White → To P9-15
To P9-19
Orang → To P9-1
To P9-13
Red → To P9-12
White → To P9-11

P9
To P10-1 White
To P10-2 Red
To P10-3

P17 END SENSING SWITCH S803
To Plunger -1
To Plunger -2
To S5-2
To S4-2
To S4-3
To P9-MC6
White → To Cassette Motor ⊕
To Cassette Motor ⊖
Blue → To S3-3
Yellow → To S3-2
Brown → To S3-1

VR403,404 REC VOLUME CONTROL
P11
To P8-8 Red
To P8-7 White
To P8-9

MC9 To P9-MC9
To P9-35 White
To P9-36 Red
To P9-37
To P9-10 Red

To P6-21 Orange
Black → To P6-25
Black → To P6-24
Red → To P11-4
White → To P11-3
To P11-5

P10
RIGHT MIC LEFT

VR505,506 TREBLE CONTROL
VR503,504 BASS CONTROL
VR507 BALANCE CONTROL
VR501,502 VOLUME CONTROL

White → To P6-15
Red → To P6-16
To P6-17

HEDPHONES

RIGHT LEFT
Sky Blue
Black
Black
Yellow
MC10 → To P9-MC10

Pilot Lamp
To P6-18 White
To P6-20 White

AUDIO MUTING SWITCH S7
To P1-18 Yellow
To P1-8 Orange

POWER SWITCH S1
To P18-6 Blue
To Power Cord Sky Blue
To Power Cord Brown
To P18-11 Brown

P16 D803
To P9-9 Red
To P9-7 Black

To P7-3
Red → To P7-4
White → To P7-5
To P7-2
To P7-1
To P7-3

501
E SELECTOR
TCH

SCHEMATIC DIA

FM RF TUNER SSD5004

TOUCH SENSOR IC102 SN94042N IC101 SN9404IN

FM, AF IF AMP IC201 AN217P-BB

AM AGC D204 0A90

SWITCHING D201 MA150 D202 20A90

AOC D205 VD1160M

AM RECT D206 20A90

FM IF AMP, DET IC202 AN377

AM DET D207 20A90

AM SIGNAL METER AMP Q202 2SC828-R,S

DAMPER D203 20A90

FM MPX IC301 LA3350A

FM MUTING Q201,204 2SC945L-P,K

SWIT C 2SC9

FM TUNING AM SIGNAL M4

FM RF TUNER

FM INT ANT

FM EXT ANT

AM EXT ANT

MANUAL/PRESET TOUCH BUTTON

MANUAL P1 P2 P3 P4 P5 P6

R131~137 1.5M

IC102 SN94042N

IC101 SN9404IN

IC201 AN217P

IC202 AN377

IC301 LA3350A

MANUAL/PRESET INDICATOR

D117 D111 D112 D113 D114 D115 D116

FM MANUAL/PRESET INDICATOR LAMP D111~117 LN28RP

SWITCHING Q102 2SC828-R,S

FM TUNING Q103 2SA991-E,F

D110 VD1223

M3 FM DIAL

FM DIAL METER TUNING Q104,105 2SA564-R,S

SWITCHING Q101 2SC828-R,S

SWITCHING D101~109,118 MA150

SWITCHING D812~816 MA150

SWITCHING D301 MA150

STABILIZER IC921 µPC78L12

AM CONV Q203 2SC1359B

PHONO EQ A Q601,602,603,6 2SC1327-T

STEREO IND D302 LN28RP

ONE SHOT MULTI-VIBRATOR Q805,806 2SC828-R,S

MUTING Q807,808 2SC945L-P,K

EQ AMP Q401,402,403,404 2SC1327-T,U

DOLBY IC801,802 NE646BN

SWITCHING Q809 2SC828-R,S

METER AMP Q405,406 2SC828-R,S

RECT D401~406 20A90

PEAK IND AMP Q413 2SC828-R,S

PEAK IND D407 LN28RP

DAMPER D811 10E1LF

END SENSOR Q803 2SC828-R,S Q804 2SD592NC-R,S

RECT D808,809 MAI50

AOC D810 MAI091

R/P HEAD Lch

R/P HEAD Rch

ERASE HEAD

BIAS AMP Q802 2SD592NC-R,S

BIAS OSC Q801 2SC828-R,S

REC IND D803 LN28RP

AOC D801 RD4R3EB

D802 VD1223

TAPE IND D804 LN38GP D805 LN48YP D806 LN28RP

DOLBY IND D807 LN48YP

VU METER M1 Lch M2 Rch

MIC Lch

MIC Rch

REC AMP Q409,410 2SC1684-R,S

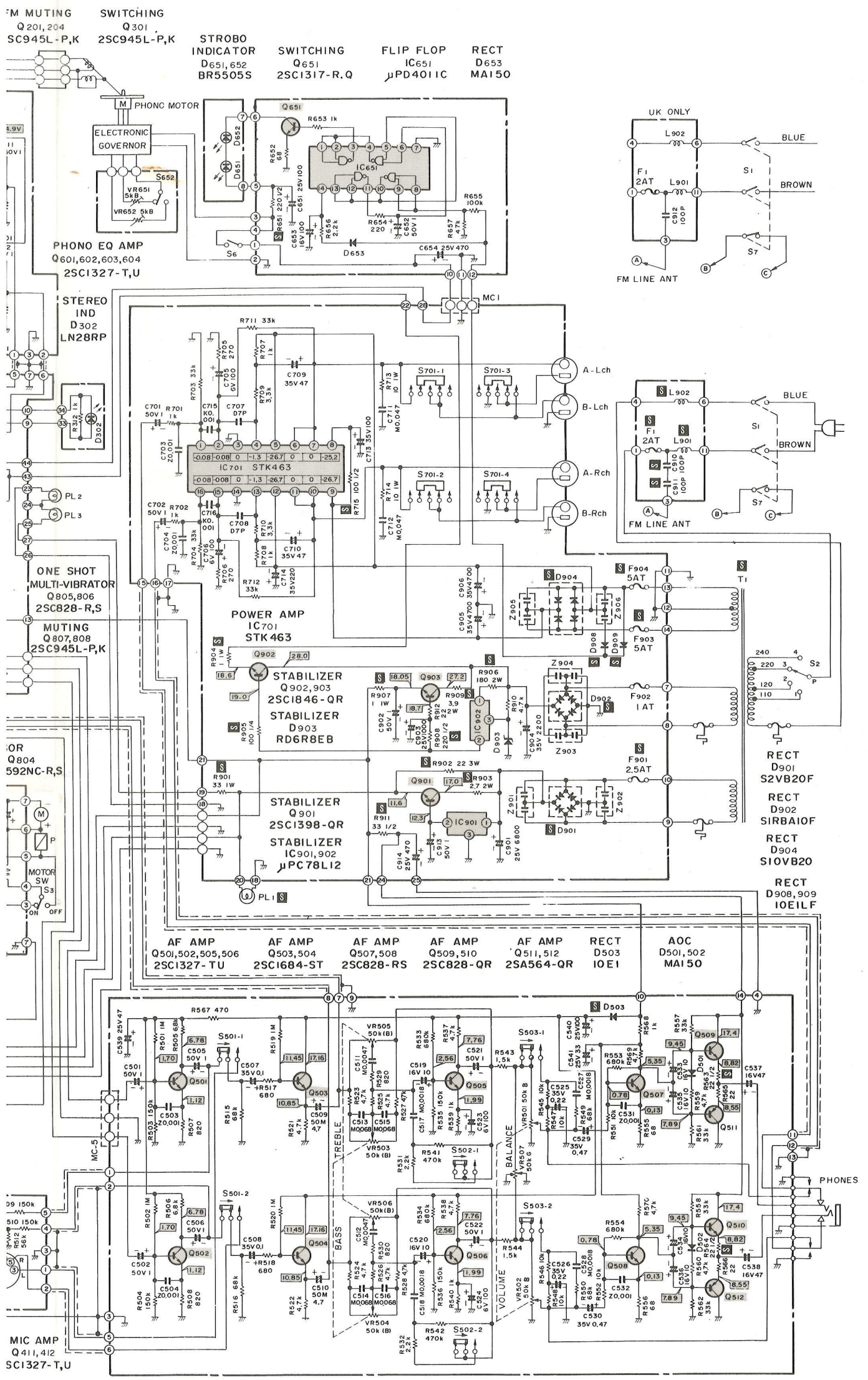
MUTING Q407,408 2SC828-R,S

MIC AMP Q411,412 2SC1327-T,U

R	137 131 132 133 134 135 136 110 108 109 401 402 403 404 VR802 VR801 810 111 112 405 407 406 408 809 VR108 VR109 113 114 126 409 422 410 412 414 806 808 VR803 807 115 411 413 118 130 415 421 416 116 117 125 VR112 VR107 VR111 119 417 418 VR401 420 VR402 803 804 805 121 VR106 VR105 205 127 128 201 122 123 VR104 VR103 VR102 VR101 813 235 129 815 VR403 817 816 818 812 202 222 223 224 423 424 VR404 203 225 819 820 204 821 822 823 824 811 825 826 828 921 236 237 254 227 232 243 238 840 829 830 832 207 208 226 231 241 VR409 VR201 VR407 VR405 VR406 210 206 228 229 230 248 252 242 460 831 233 249 301 239 240 471 472 448 215 234 851 436 437 459 216 315 852 439 440 442 441 465 VR408 466 211 250 314 302 853 854 855 457 463 464 251 443 445 303 856 VR302 VR303 VR304 VR305 VR306 VR307 VR308 212 217 218 219 246 247 VR301 VR302 VR303 VR304 VR305 VR306 VR307 VR308 253 213 305 308 856 VR302 304 316 220 306 307 857 246 453 450 469 454 470 247 309 313 602 621 310 317 834 425 451 427 429 839 431 417 418 420 433 426 430 434 428 601 605 606 608 837 838 452 431 432 435 603 607 609 604 611 612 610 622 615 613 620 619 509 510 511 512
C	108 103 104 105 106 116 407 112 409 411 413 410 408 805 412 803 114 107 102 101 115 109 117 111 835 836 802 258 921 225 813 837 814 801 110 922 202 203 249 226 CV201 815 816 204 246 247 CT201 CT202 CT203 248 250 821 823 817 819 818 820 822 825 824 826 205 206 232 233 257 827 828 829 831 832 841 833 834 227 234 244 228 254 209 210 211 212 213 229 255 253 432 214 220 231 CT204 238 242 CT206 423 424 215 221 219 CT205 236 240 443 446 222 301 302 422 441 426 444 216 303 852 425 427 428 439 440 207 402 312 304 305 251 252 429 430 433 449 438 436 434 450 448 307 308 306 453 454 415 416 309 310 601 602 613 839 831 417 418 615 604 603 605 616 609 606 607 611 612 610 608 420 301 302 804 840 539 501 502
L	805 921 803 801 802 201 202 203 403 404 204 205 206 207 401 402 804
T	801 201 202 203 204
SW	S802-1 S802-2 ST3 ST5 S403-1 ST7 ST8 ST1 S401-3 SF2-3 SF1-6 S401-4 SF5-1 S403-2 SF5-2 SF4-2 SF4-1 SF5-5 ST9 ST10 S402-2 S401-2 SF4-3 SF5-6 SF4-6 S801-2 SF3-3 SF5-3 SF3-5 S801-4 SF2-3 SF3-4 SF2-2 SF3-6 S801-3 S804 ST2 S403-3 SF3-2 SF4-5 S403-4 SF1-5 SF5-4 ST11 S402-4 SF3-1 SF4-4 ST12 S402-3 SF1-3 SF1-4 SF1-1 SF2-6 SF2-5 SF2-4 SF6-1 SF6-3 S55 S54 SF6-4 S803 SF6-2 SF7-2 SF7-1 S3

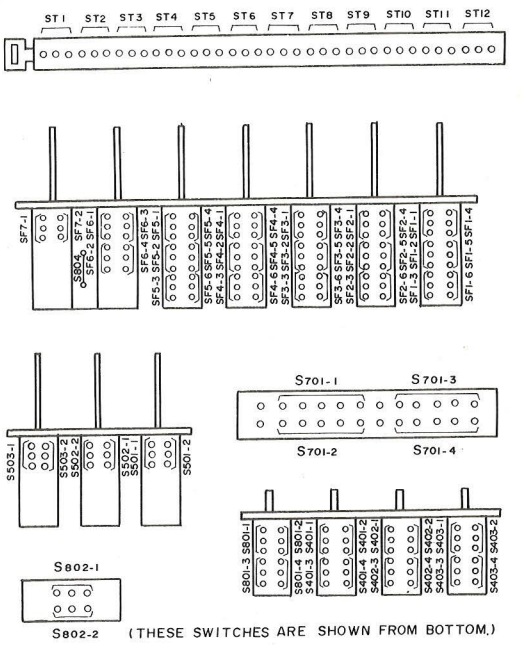
* This diagram might be modified without notice for further development of technology.

ATIC DIAGRAM



IMPORTANT SAFETY NOTICE

THE Ⓢ MARK ON THIS SCHEMATIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR SAFETY.
WHEN SERVICING IT IS ESSENTIAL THAT ONLY MANUFACTURER'S SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS MARKED Ⓢ IN THE SCHEMATIC.



NOTES

(1) S1 : POWER SWITCH IN "OFF" POSITION
S2 : POWER VOLTAGE SELECTOR SWITCH IN "220V" POSITION (P: COMMON, 1: 110V, 2: 120V, 3: 220V, 4: 240V)
S3 : TAPE MOTOR SWITCH IN "ON" POSITION
S4 : TAPE PLAYBACK SWITCH IN "ON" POSITION
S5 : TAPE PAUSE SWITCH IN "OFF" POSITION
S6 : PHONO MOTOR SWITCH IN "OFF" POSITION
S7 : AUDIO MUTING SWITCH IN "ON" POSITION
SF1 ~ SF7 : FUNCTION SELECTOR SWITCH IN "FM AUTO" POSITION (SF1: FM AUTO, SF2: FM MONO, SF3: MW, SF4: LW, SF5: SW, SF6: PHONO, SF7: TAPE)
ST1 ~ ST12 : REC/PLAY SELECTOR SWITCH IN "PLAY" POSITION
S401 ~ S403 : TAPE/SELECTOR SWITCH IN "NORMAL" POSITION (S401: NORMAL, S402: FeCr S403: CrO2)
S501 : TAPE/SOURCE SELECTOR SWITCH IN "SOURCE" POSITION
S502 : HIGH FILTER SWITCH IN "OFF" POSITION
S503 : LOUDNESS SWITCH IN "OFF" POSITION
S652 : SPEED SELECTOR SWITCH IN "33rpm" POSITION
S801 : DOLBY NR SWITCH IN "OUT" POSITION
S802 : WHISTLE DEFEAT SWITCH IN "A" POSITION
S803 : END SENSING SWITCH
S804 : FUNCTION MUTING SWITCH IN "OFF" POSITION

(2) Letters Z, M, K, J, &F indicate tolerance of capacitors as follows
Z = +80 −20 % M = ±20% K = ±10% J = ±5% F = ±1%

(3) DC Voltages shown in ▭ or ( ) are to be measured with VTVM under no signal condition in AM or FM position.

SCHEMATIC DIAGRAM MODEL SG-5090

REPLACEMENT PARTS LIST

NOTE:
Components identified by Ⓢ mark have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.

Ref. No.	Part No.	Description	Per Set (pcs.)
TRANSISTORS			
Q101,102	2SC828	Switching	2
Q103	2SA991	FM Tuning	1
Q104,105	2SA564	Meter Tuning	2
Q201	2SD945L	FM Muting	1
Q202	2SC828	Meter Amp	1
Q203	2SD1359	AM Converter	1
Q204	2SD945L	FM Muting	1
Q301	2SD945L	Switching	1
Q401,402	2SC1327	Tape EQ Amp	2
Q403,404	2SC1327	Tape EQ Amp	2
Q405,406	2SC828	Meter Amp	2
Q407,408	2SC828	Muting	2
Q409,410	2SD1684	Rec Amp	2
Q411,412	2SC1327	Mic Amp	2
Q413	2SC828	Peak Indicator Amp	1
Q501,502	2SC1327	AF Amp	2
Q503,504	2SC1684	AF Amp	1
Q505,506	2SC1327	AF Amp	2
Q507,508	2SC828	AF Amp	2
Q509,510	2SC828	AF Amp	2
Q511,512	2SA564	AF Amp	2
Q601,602	2SC1327	Phono EQ Amp	2
Q603,604	2SC1327	Phono EQ Amp	2
Q801	2SC828	Bias Amp	1
Q802	2SD592NC	Bias Amp	1
Q803	2SC828	End Sensor	1
Q804	2SD592NC	End Sensor	1
Q805,806	2SC828	Multi Vidrator	2
Q807,808	2SD945L	FM Muting	2
Q809	2SC828	Switching	1
Q901	2SC1398	Stabilizer	1
Q902,903	2SC1846	Stabilizer	2
TRANSISTORS (PLAYER)			
Q651	2SC1317	Switching	1
INTEGRATED CIRCUITS			
IC101	SN94041N	Touch Sensor	1
IC102	SN94042N	Touch Sensor	1
IC201	AN217	FM, AM, IF Amp	1
IC202	AN377	FM, IF Amp	1
IC301	LA3350A	FM MPX	1
IC701	STK463	Power Amp	1
IC801,802	NE646BN	Dolby	2
IC901,902	UPC78L12	Stabilizer	2
IC921	UPC78L12	Stabilizer	1
INTEGRATED CIRCUIT (PLAYER)			
IC651	UPD4011C	Flip Flop	1
THEMISTOR			
TH801,802	ERTDZFHK202S	Thermistor	2
DIODES			
D101,102	MA150	Switching	2
D103,104	MA150	Switching	2
D105,106	MA150	Switching	2
D107,108	MA150	Switching	2
D109	MA150	Switching	1
D110	VD1223	FM Tuning	1
D111,112	LN28RP	FM Manual Indicator	2
D113,114	LN28RP	FM Manual Indicator	2
D115,116	LN28RP	FM Manual Indicator	2
D117	LN28RP	FM Manual Indicator	1
D118	MA150	Switching	1
D201	MA150	Switching	1
D202	2OA90	Switching	1
D203	2OA90	Damper	1
D204	2OA90	AM AGC	1
D205	VD1160M	A.O.C	1
D206	2OA90	AM Rect	1
D207	2OA90	AM Det	1
D301	MA150	Switching	1
D302	LN28RP	Stereo Indicator	1
D401,402	2OA90	Rect	2
D403,404	2OA90	Rect	2
D405,406	2OA90	Rect	2
D407	LN28RP	Peak Indicator	1
D501,502	MA150	A.O.C	2
D503 Ⓢ	SM112	Rect	1
D801	RD4R3EB	A.O.C	1
D802	VD1223	A.O.C	1

REPLACEMENT PARTS LIST

Ref. No.	Part No.	Description	Per Set (pcs.)
D803	LN28RP	Rec Indicator	1
D804	LN38GP	Tape Indicator	1
D805	LN48YP	Tape Indicator	1
D806	LN28RP	Tape Indicator	1
D807	LN48YP	Dolby Indicator	1
D808,809	MA150	Rect	2
D810	MA1091	A.O.C	1
D811 Ⓢ	SM112	Damper	1
D812,813	MA150	Switching	2
D814,815	MA150	Switching	2
D816	MA150	Switching	1
D901 Ⓢ	S2VB20	Rect	1
D902 Ⓢ	S1RBA10	Rect	1
D903	RD6R8EB	Stabilizer	1
D904 Ⓢ	S10VB20	Rect	1
D908,909 Ⓢ	SM112	Rect	2
DIODES (PLAYER)			
D651,652	BR5505S	Storobo Eye	2
D653	MA150	Rect	1
LAMP AND FUSES			
PL1 Ⓢ	XAMQ33P	Lamp	1
PL4,5 Ⓢ	XAMR53X300	Lamp	2
F1 Ⓢ	XBA2C20TRO	Fuse, 2.0AT	1
F901 Ⓢ	XBA2C25TRO	Fuse, 2.5AT	1
F902 Ⓢ	XBA2C10TRO	Fuse, 1AT	1
F903,904 Ⓢ	XBA2C50TRO	Fuse, 5AT	2
METERS			
M1,2	SSM132	Meter	2
M3	SSM68	Meter with Lamp	1
M4	SSM70	Meter with Lamp	1
COILS AND TRANSFORMERS			
L201,202	SLF6G34-O	Ferrite Antenna Coil	1
L203	SLA3M6-M	Antenna Coil, SW	1
L204	SLO2M6-M	Oscillator Coil, MW	1
L205	SLO1M8-M	Oscillator Coil, LW	1
L206	SLO3M2-M	Oscillator Coil, SW	1
L207	SLQX180-2	Choke Coil	1
L301,302	SLM9Z2-2K	Trap Coil	2
L401,402	SLQU222-2Y	Coil	2
L403,404	SLQV393-4Y	Trap Coil	2
L801,802	SLM9Z4-2K	Trap Coil	2
L803,804	SLQU270-2K	Choke Coil	2
L805	SLO9Z10-K	Oscillator Coil	1
L901,902 Ⓢ	SLQY35S-2S	Choke Coil	2
L921	SLQU270-2K	Choke Coil	1
T1 Ⓢ	SLT7C2-W	Power Transformer	1
T201	SLI2M102	I.F Transformer, AM	1
T202	RLI7V102-M	Ceramic Filter, AM	1
T203	SLI2M202-M	I.F Transformer, AM	1
T204	SLI4D513-3	I.F Transformer, FM	1
T801	SLT6E4	Output Transformer	1
CF201,202	SVF107MA5V	Ceramic Filter, FM	2
CF203	SVF107MA5V	Ceramic Filter, FM	1
COMPONENT COMBINATION			
Z201	EXAF203Z471	C-R	1
Z901,902	EXRFS203ZS	C-C	2
Z903,904	EXRFS203ZS	C-C	2
Z905,906	EXRFS203ZS	C-C	2
VARIABLE RESISTORS			
VR101,102	SVV2	Volume	2
VR103,104	SVV2	Volume	2
VR105,106	SVV2	Volume	2
VR108	EVMH1GA00B55	Preset 500kΩ B	1
VR109	EVLS3AA00B14	Preset 10kΩ B	1
VR110,111	EVLS3AA00B32	Preset 300Ω B	2
VR112	EVLS3AA00B55	Preset 500kΩ B	1
VR201	EVLS3AA00B54	Preset 50kΩ B	1
VR301	EVTS3MA00B53	Preset 5kΩ B	1
VR302	EVLS3AA00B13	Preset 1kΩ B	1
VR401,402	EVLS3AA00B24	Preset 20kΩ B	2
VR403,404	EVH6UA067B14	Rec10kΩ B	2
VR405,406	EVLS3AA00B14	Preset 10kΩ B	2
VR407,408	EVLS3AA00B53	Preset 5kΩ B	2
VR409	EVLS3AA00B24	Preset 20kΩ B	1
VR501,502	EWFN3AF25B54	Volume 50kΩ B	2
VR503,504	EWKE2A033B54	Bass, Treble 50kΩ B	1
VR505,506	EWKE2A033B54	Bass, Treble 50kΩ B	1
VR507	EVHR6A067G54	Balance 50kΩ G	1
VR801,802	EVLS3A00B14	Preset 10kΩ B	1
VR803	EVLS3AA00B13	Preset 1kΩ B	1

REPLACEMENT PARTS LIST

Ref. No.	Part No.	Description	Per Set (pcs.)
VARIABLE RESISTOR (PLAYER)			
VR641,642	EVHLOAF25B53	Preset 5kΩ B	2
VARIABLE CAPACITORS			
CT201,202	SCVCTY211D31	Trimmer	1
CT203	SCVCTY115D	Trimmer	1
CT204,205	SCVCTY211D31	Trimmer	1
CT206	SCVCTY115D	Trimmer	1
CV201,202	SCVCE21W114	Tuning Capacitor with Volume (VR107)	1
SWITCHES			
S1	ESL21176	Power	1
S2	ESE3742	Voltage Selector	1
S7	SSP38	Muting	1
S401～403, 801	SSH408	Dolby	1
S501～503	ESL36218	Loundness	1
S701	ESA2710	Speaker Slector	1
S802 S	SSS94	Whistle Defeat	1
S803	SSP20	Lead	1
ST1～12	ESD86023-1	Rec/Play	1
SF1～7,S804	ESL36219	Function	1
SWITCH (PLAYER)			
S641	SSL28-1	Function	1
PACKING			
1	SPN3318-1	Carbon Box	1
2	SPN3320	Pad, Front	1
3	SPN3322-1	Pad, Rear	1
4	SPN3324	Pad, Dust Cover	1
5	SNE212	Screw, Player Transit	1
6	SNW601	Washer, Player Transit	1
7	XZB92X63C05	Set Cover	1

Ref. No.	Part No.	Description	Per Set (pcs.)
OTHERS			
1	SJP2212	Speaker Cord	2
2	SQX5938	Instruction Book	1
3	SPT1HCZNRAZ	Demonstration Tape	1
4	OL340	Silicone Oil (for Transistor and IC)	1
5	SZOGM380	Grease (for Player)	1
6	AD1600	Adhesives	1

REPLACEMENT PARTS LIST

Numbering System of Resistor

Type	Wattage	Tolerance	Value
Three Letters	One or Two Letters	Two or Three Letters	Three or Four Letters

Example: E R D 2 5 T J 1 0 1

Resistor Type	Tolerance
ERD: Carbon Film	F: ±1%
ERC: Solid	J: ±5%
ERX: Metal Film	K: ±10%
ERG: Metal Oxide Film	
ERO: Hi Stability Metal Film	
ERF: Flameproof Wire-Wound Bath-Tube	
ERQ: Fuse Type Metal Film	

Ref. No.	Part No.	Description	Per Set (pcs.)
RESISTORS			
R108	ERD25TJ103	10kΩ 1/4W	1
R109	ERD25TJ473	47kΩ 1/4W	1
R110	ERD25TJ152	1.5kΩ 1/4W	1
R111	ERD25TJ682	6.8kΩ 1/4W	1
R112	ERD25TJ104	100kΩ 1/4W	1
R113	ERD25TJ474	470kΩ 1/4W	1
R114,115	ERD25TJ103	10kΩ 1/4W	2
R116	ERD25TJ104	100kΩ 1/4W	1
R117,118	ERD25TJ334	330kΩ 1/4W	2
R119,120	ERD25TJ222	2.2kΩ 1/4W	2
R121	ERD25TJ561	560Ω 1/4W	1
R122	ERD25TJ473	47kΩ 1/4W	1
R123	ERD25TJ223	22kΩ 1/4W	1
R125,126	ERD25TJ224	220kΩ 1/4W	2
R127,128	ERD25TJ104	100kΩ 1/4W	2
R129 S	ERG1ANJ471	470Ω 1W	1
R130	ERD25TJ561	560Ω 1/4W	1
R131,132	ERD25TJ155	1.5MΩ 1/4W	2
R133,134	ERD25TJ155	1.5MΩ 1/4W	2
R135,136	ERD25TJ155	1.5MΩ 1/4W	2
R137	ERD25TJ155	1.5MΩ 1/4W	1
R201	ERD25TJ221	220Ω 1/4W	1
R202	ERD25TJ472	4.7kΩ 1/4W	1
R203,204	ERD25TJ331	330Ω 1/4W	2
R205,206	ERD25TJ224	220kΩ 1/4W	2
R207	ERD25TJ104	100kΩ 1/4W	1
R208	ERD25TJ473	47kΩ 1/4W	1
R210	ERD25TJ331	330Ω 1/4W	1
R211	ERD25TJ102	1kΩ 1/4W	1
R212	ERD25TJ104	100kΩ 1/4W	1
R213	ERD25TJ471	470Ω 1/4W	1
R215 S	ERGIANJ471	470Ω 1W	1
R216	ERD25TJ472	4.7kΩ 1/4W	1
R217	ERD25TJ222	2.2kΩ 1/4W	1
R218	ERD25TJ103	10kΩ 1/4W	1
R219	ERD25TJ822	8.2kΩ 1/4W	1
R220	ERD25TJ103	10kΩ 1/4W	1
R221	ERD25TJ152	1.5kΩ 1/4W	1
R222	ERD25TJ332	3.3kΩ 1/4W	1
R223	ERD25TJ102	1kΩ 1/4W	1
R224	ERD25TJ153	15kΩ 1/4W	1
R225	ERD25TJ681	680Ω 1/4W	1
R226	ERD25TJ332	3.3kΩ 1/4W	1
R227	ERD25TJ223	22kΩ 1/4W	1
R228	ERD25TJ333	33kΩ 1/4W	1
R229	ERD25TJ103	10kΩ 1/4W	1
R230	ERD25TJ104	100kΩ 1/4W	1
R231	ERD25TJ224	220kΩ 1/4W	1
R232	ERD25TJ333	33kΩ 1/4W	1
R233	ERD25TJ682	6.8kΩ 1/4W	1
R234	ERD25TJ104	100kΩ 1/4W	1
R235	ERD25TJ681	680Ω 1/4W	1
R236,237	ERD25TJ103	10kΩ 1/4W	2
R238	ERD25TJ332	3.3kΩ 1/4W	1
R239,240	ERD25TJ330	33Ω 1/4W	2
R241	ERD25TJ331	330Ω 1/4W	1
R242	ERD25TJ152	1.5kΩ 1/4W	1
R243	ERD25TJ4R7	4.7Ω 1/4W	1
R244	ERD25TJ472	4.7kΩ 1/4W	1
R245	ERD25TJ103	10kΩ 1/4W	1
R246	ERD25TJ223	22kΩ 1/4W	1
R247	ERD25TJ221	220Ω 1/4W	1
R248 S	ERQ12HJ820	82Ω 1/2W	1
R249	ERD25TJ221	220Ω 1/4W	1
R250	ERD25TJ103	10kΩ 1/4W	1
R251	ERD25TJ332	3.3kΩ 1/4W	1
R252	ERD25TJ102	1kΩ 1/4W	1
R253	ERD25TJ471	470Ω 1/4W	1
R254	ERD25TJ104	100kΩ 1/4W	1
R301	ERD25TJ103	10kΩ 1/4W	1
R302	ERD25TJ682	6.8kΩ 1/4W	1
R303	ERD25TJ332	3.3kΩ 1/4W	1
R304	ERD25TJ473	47kΩ 1/4W	1
R305	ERD25TJ103	10kΩ 1/4W	1
R306,307	ERD25TJ182	1.8kΩ 1/4W	2
R308,309	ERD25TJ332	3.3kΩ 1/4W	2
R310,311	ERD25TJ223	22kΩ 1/4W	2
R312	ERD25TJ102	1kΩ 1/4W	1
R313	ERD25TJ222	2.2kΩ 1/4W	1
R314	ERD25TJ101	100Ω 1/4W	1
R315 S	ERGIANJ331	330Ω 1W	1
R316	ERD25TJ473	47kΩ 1/4W	1
R317	ERD25TJ102	1kΩ 1/4W	1
R401,402	ERD25TJ100	10Ω 1/4W	2
R403,404	ERD25TJ823	82kΩ 1/4W	2
R405,406	ERD25TJ104	100kΩ 1/4W	2
R407,408	ERD25TJ101	100Ω 1/4W	2

REPLACEMENT PARTS LIST

Ref. No.	Part No.	Description	Per Set (pcs.)
R409,410	ERD25TJ224	220kΩ 1/4W	2
R411,412	ERD25TJ103	10kΩ 1/4W	2
R413,414	ERD25TJ102	1kΩ 1/4W	2
R415,416	ERD25TJ822	8.2kΩ 1/4W	2
R417,418	ERD25TJ224	220kΩ 1/4W	2
R419,420	ERD25TJ822	8.2kΩ 1/4W	2
R421	ERD25TJ331	330Ω 1/4W	1
R422,423	ERD25TJ333	33kΩ 1/4W	2
R424	ERD25TJ333	33kΩ 1/4W	1
R425,426	ERD25TJ682	6.8kΩ 1/4W	2
R427,428	ERD25TJ331	330Ω 1/4W	2
R429,430	ERD25TJ105	1MΩ 1/4W	2
R431,432	ERD25TJ332	3.3kΩ 1/4W	2
R433,434	ERD25TJ473	47kΩ 1/4W	2
R435	ERD25TJ471	470Ω 1/4W	1
R436	ERD25TJ102	1kΩ 1/4W	1
R437,438	ERD25TJ152	1.5kΩ 1/4W	2
R439,440	ERD25TJ224	220kΩ 1/4W	2
R441,442	ERD25TJ331	330Ω 1/4W	2
R443,444	ERD25TJ222	2.2kΩ 1/4W	2
R445,446	ERD25TJ563	56kΩ 1/4W	2
R447,448	ERD25TJ473	47kΩ 1/4W	2
R449,450	ERD25TJ472	4.7kΩ 1/4W	2
R451	ERD25TJ333	33kΩ 1/4W	1
R452	ERD25TJ472	4.7kΩ 1/4W	1
R453,454	ERD25TJ332	3.3kΩ 1/4W	2
R455,456	ERD25TJ334	330kΩ 1/4W	2
R457,458	ERD25TJ102	1kΩ 1/4W	2
R459,460	ERD25TJ103	10kΩ 1/4W	2
R461,462	ERD25TJ471	470Ω 1/4W	2
R463,464	ERD25TJ152	1.5kΩ 1/4W	2
R465,466	ERD25TJ331	330Ω 1/4W	2
R467,468	ERD25TJ470	47Ω 1/4W	2
R469,470	ERD25TJ151	150Ω 1/4W	2
R471	ERD25TJ332	3.3kΩ 1/4W	1
R472 S	ERQ12HJ820	82Ω 1/2W	1
R501,502	ERD25TJ105	1MΩ 1/4W	2
R503,504	ERD25TJ154	150kΩ 1/4W	2
R505,506	ERD25TJ682	6.8kΩ 1/4W	2
R507,508	ERD25TJ821	820Ω 1/4W	2
R509,510	ERD25TJ154	150kΩ 1/4W	2
R511,512	ERD25TJ563	56kΩ 1/4W	2
R515,516	ERD25TJ683	68kΩ 1/4W	2
R517,518	ERD25TJ681	680Ω 1/4W	2
R519,520	ERD25TJ105	1MΩ 1/4W	2
R521,522	ERD25TJ472	4.7kΩ 1/4W	2
R523,524	ERD25TJ472	4.7kΩ 1/4W	2
R525,526	ERD25TJ472	4.7kΩ 1/4W	2
R527,528	ERD25TJ472	4.7kΩ 1/4W	2
R529,530	ERD25TJ821	820Ω 1/4W	2
R531,532	ERD25TJ222	2.2kΩ 1/4W	2
R533,534	ERD25TJ684	680kΩ 1/4W	2
R535,536	ERD25TJ154	150kΩ 1/4W	2
R537,538	ERD25TJ472	4.7kΩ 1/4W	2

Ref. No.	Part No.	Description	Per Set (pcs.)
R539,540	ERD25TJ102	1kΩ 1/4W	2
R541,542	ERD25TJ474	470kΩ 1/4W	2
R543,544	ERD25TJ152	1.5kΩ 1/4W	2
R545,546	ERD25TJ103	10kΩ 1/4W	2
R547,548	ERD25TJ103	10kΩ 1/4W	2
R549,550	ERD25TJ683	68kΩ 1/4W	2
R551,552	ERD25TJ103	10kΩ 1/4W	2
R553,554	ERD25TJ684	680kΩ 1/4W	2
R555,556	ERD25TJ680	68Ω 1/4W	2
R557,558	ERD25TJ333	33kΩ 1/4W	2
R559,560	ERD25TJ472	4.7kΩ 1/4W	2
R561,562	ERD25TJ333	33kΩ 1/4W	2
R563,564 S	ERQ12HJ220	22Ω 1/2W	2
R565,566	ERD25TJ220	22Ω 1/4W	2
R567	ERD25TJ471	470Ω 1/4W	1
R568	ERD25TJ102	1kΩ 1/4W	1
R569,570	ERD25TJ472	4.7kΩ 1/4W	2
R601,602	ERD25TJ102	1kΩ 1/4W	2
R603,604	ERD25TJ154	150kΩ 1/4W	2
R605,606	ERD25TJ122	1.2kΩ 1/4W	2
R607,608	ERD25TJ104	100kΩ 1/4W	2
R609,610	ERD25TJ683	68kΩ 1/4W	2
R611,612	ERD25TJ682	6.8kΩ 1/4W	2
R613,614	ERD25TJ471	470Ω 1/4W	2
R615,616	ERD25TJ682	6.8kΩ 1/4W	2
R619,620	ERD25TJ104	100kΩ 1/4W	2
R621	ERD25TJ102	1kΩ 1/4W	1
R622	ERD25TJ333	33kΩ 1/4W	1
R701,702	ERD25TJ102	1kΩ 1/4W	2
R703,704	ERD25TJ333	33kΩ 1/4W	2
R705,706	ERD25TJ271	270Ω 1/4W	2
R707,708	ERD25TJ102	1kΩ 1/4W	2
R709,710	ERD25TJ332	3.3kΩ 1/4W	2
R711,712	ERD25TJ333	33kΩ 1/4W	2
R713,714	ERG1ANJ100	10Ω 1W	2
R715 S	ERQ12HJ101	100Ω 1/2W	1
R801	ERD25TJ122	1.2kΩ 1/4W	1
R802	ERD25TJ182	1.8kΩ 1/4W	1
R803	ERD25TJ472	4.7kΩ 1/4W	1
R804,805	ERD25TJ222	2.2kΩ 1/4W	2
R806	ERD25TJ471	470Ω 1/4W	1
R807	ERD25TJ271	270Ω 1/4W	1
R808	ERD25TJ221	220Ω 1/4W	1
R809	ERD25TJ222	2.2kΩ 1/4W	1
R810	ERD25TJ220	22Ω 1/4W	1
R811	ERD25TJ821	820Ω 1/4W	1
R812	ERD25TJ122	1.2kΩ 1/4W	1
R813,814	ERD25TJ102	1kΩ 1/4W	2
R815,816	ERD25TJ102	1kΩ 1/4W	2
R817,818	ERD25TJ102	1kΩ 1/4W	2
R819,820	ERO25CKF3301	3.3kΩ 1/8W	2
R821,822	ERD25TJ473	47kΩ 1/4W	2
R823,824	ERD25TJ181	180Ω 1/4W	2
R825,826	ERD25TJ104	100kΩ 1/4W	2

REPLACEMENT PARTS LIST

Ref. No.	Part No.	Description		Per Set (pcs.)
R827,828	ERD25TJ104	100kΩ	1/4W	2
R829,830	ERD25TJ274	270kΩ	1/4W	2
R831,832	ERD25TJ105	1MΩ	1/4W	2
R833 S	ERQ12HJ150	15Ω	1/2W	1
R834	ERD25TJ472	4.7kΩ	1/4W	1
R835	ERD25TJ562	5.6kΩ	1/4W	1
R836	ERD25TJ103	10kΩ	1/4W	1
R837	ERD25TJ332	3.3kΩ	1/4W	1
R838	ERD25TJ331	330Ω	1/4W	1
R839	ERD25TJ122	1.2kΩ	1/4W	1
R840	ERD25TJ333	33kΩ	1/4W	1
R841	ERD25TJ104	100kΩ	1/4W	1
R842	ERD25TJ103	10kΩ	1/4W	1
R851	ERD25TJ103	10kΩ	1/4W	1
R852	ERD25TJ222	2.2kΩ	1/4W	1
R853	ERD25TJ683	68kΩ	1/4W	1
R854	ERD25TJ473	47kΩ	1/4W	1
R855	ERD25TJ222	2.2kΩ	1/4W	1
R856,857	ERD25TJ103	10kΩ	1/4W	2
R901 S	ERG1ANJ330	33Ω	1W	1
R902 S	ERQ3CJ220	22Ω	3W	1
R903 S	ERQ2CJ2R7	2.7Ω	2W	1
R904 S	ERX1ANJ1RO	1Ω	1W	1
R905 S	ERD14FJ101	100Ω	1/4W	1
R906	ERG2ANJ181	180Ω	2W	1
R907 S	ERX1ANJ1RO	1Ω	1W	1
R908 S	ERQ12HJ221	220Ω	1/2W	1
R909 S	ERX2ANJ3R9	3.9Ω	2W	1
R910	ERD25TJ472	4.7kΩ	1/4W	1
R911 S	ERQ12HJ330	33Ω	1/2W	1
R912	ERD25TJ220	22Ω	1/4W	1
R921 S	ERQ12HJ100	10Ω	1/2W	1
RESISTORS (PLAYER)				
R651 S	ERQ12HJ221	220Ω	1/2W	1
R652	ERD25TJ680	68Ω	1/4W	1
R653	ERD25TJ102	1kΩ	1/4W	1
R654	ERD25TJ221	220Ω	1/4W	1
R655	ERD25TJ104	100kΩ	1/4W	1
R656	ERD25TJ222	2.2kΩ	1/4W	1
R657	ERD25TJ473	47kΩ	1/4W	1

Numbering System of Capacitor

Type	Voltage	Value	Tolerance
Four Letters	One or Two Letters	Two to Five Letters	One or Two Letters

Example:

E C K D 1 H 3 3 3 M D

Capacitor Type	Tolerance
ECCD: Temperature Compensation Ceramic	C: ±0.25pF
ECKD: Hi Dielectric Constant Ceramic	D: ±0.5pF
ECQM: Polyester	F: ±1pF
ECQS: Polystyrene Film	J: ±5%
ECFD: Semiconductor Ceramic	K: ±10%
ECEA: Electrolytic	M: ±20%
ECEB: Electrolytic	P: +100, −0%
ECET: Electrolytic	
ECSF: Tantalum	

Ref. No.	Part No.	Description		Per Set (pcs.)
CAPACITORS				
C101,102	ECKD1H223ZF	0.022μF	50V	2
C103,104	ECKD1H223ZF	0.022μF	50V	2
C105,106	ECKD1H223ZF	0.022μF	50V	2
C107	ECKD1H223ZF	0.022μF	50V	1
C108,109	ECEA2AS010	1μF	100V	2
C110,111	ECEA2AS010	1μF	100V	2
C112	ECEA1CS221	220μF	16V	1
C114	ECKD1H102ZF	0.001μF	50V	1
C115	ECEA2AS2R2	2.2μF	100V	1
C116	ECFD1E473MD	0.047μF	25V	1
C117	ECEA1ES470	47μF	25V	1
C202	ECKD1H103ZF	0.01μF	50V	1
C203,204	ECFD1E223MD	0.022μF	25V	2
C205,206	ECKD1H103ZF	0.01μF	50V	2
C209	ECFD1E103MD	0.01μF	25V	1
C210	ECEA1HS100	10μF	50V	1
C211	ECFD1E333MD	0.033μF	25V	1
C212	ECFD1E103MD	0.01μF	25V	1
C213	ECEA1JS4R7	4.7μF	63V	1
C214	ECCD1H680K	68pF	50V	1
C215	ECSF35ER47T	0.47μF	35V	1
C216	ECKD1H103ZF	0.01μF	50V	1
C218,219	ECKD1H103ZF	0.01μF	50W	2
C220	ECEA1ES101	100μF	25W	1
C221,222	ECKD1H103ZF	0.01μF	50V	2
C223	ECEA2AS010	1μF	100V	1
C224	ECKD1H103ZF	0.01μF	50V	1
C225	ECKD1H103ZF	0.01μF	50V	1
C226	ECQS1152JZ	1500pF	125V	1
C227	ECEA1HS100	10μF	50V	1
C228	ECKD1H101KB	100pF	50V	1

REPLACEMENT PARTS LIST

Ref. No.	Part No.	Description	Per Set (pcs.)
C229	ECKD1H223ZF	0.001μF 50V	1
C230	ECEA1HS100	10μF 50V	1
C231	ECFD1E333MD	0.033μF 25V	1
C232	ECEA1ES470	47μF 25V	1
C233	ECFD1E103MD	0.01μF 25V	1
C234	ECKD1H102KB	0.001μF 50V	1
C235	ECQS1471JZ	470pF 125V	1
C236	ECCD1H180K	180pF 50V	1
C237	ECFD1E103MD	0.01μF 25V	1
C238	ECQS1221JZ	220pF 125V	1
C239	ECCD1H820	82pF 50V	1
C240	ECCD1H040C	4pF 50V	1
C241	ECFD1E223MD	0.022μF 25V	1
C242	ECQS1472JZ	4700pF 125V	1
C244	ECFD1E103MD	0.01μF 25V	1
C246	ECKD1H102KB	0.001μF 50V	1
C247	ECKD1H221KB	220pF 50V	1
C248	ECCD1H220K	22pF 50V	1
C249	ECKD1H102KB	0.001μF 50V	1
C250	ECCD1H220K	22pF 50V	1
C251	ECKD1H102KB	0.001μF 50V	1
C252	ECKD1H682KB	0.0068μF 50V	1
C253	ECCD1H080K	8pF 50V	1
C254	ECEA1ES101	100μF 25V	1
C255	ECEA1JS4R7	4.7μF 63V	1
C256	ECSF35ER33T	0.33μF 35V	1
C257	ECKD1H102KB	0.001μF 50V	1
C258	ECSF35ER1T	0.1μF 35V	1
C301	ECFD1E473MD	0.047μF 25V	1
C302	ECQS1152JZ	1500pF 125V	1
C303	ECEA2AS010	1μF 100V	1
C304	ECSF35ER47T	0.47μF 35V	1
C305	ECSF35ER22T	0.22μF 35V	1
C306	ECEA2AS010	1μF 100V	1
C307,308	ECFD1E333MD	0.033μF 25V	2
C309,310	ECSF35ER47T	0.47μF 3V	2
C311,312	ECEA1ES470	47μF 25V	2
C401,402	ECQS1102JZ	1000pF 125V	2
C403,404	ECEA50M4R7	4.7μF 50V	2
C405,406	ECKD1H102ZF	0.001μF 50V	2
C407,408	ECEA1HS100	10pF 50V	2
C409,410	ECEA1JS4R7	4.7μF 63V	2
C411,412	ECQM1H153MZ	0.015μF 50V	2
C413	ECEA1CS221	220μF 16V	1
C414	ECEA1AS471	470μF 10V	1
C415,416	ECSF35ER22T	0.22μF 35V	2
C417,418	ECKD1H102ZF	0.001μF 50V	2
C419,420	ECSF35E1T	1μF 35V	2
C421	ECEA1ES470	47μF 25V	1
C422	ECEA2AS3R3	3.3μF 100V	1
C423,424	ECEA1HS100	10μF 50V	2
C425,426	ECEA2AS3R3	3.3μF 100V	2
C427,428	ECEA2AS3R3	3.3μF 100V	2
C429	ECEA1HS100	10μF 50V	1

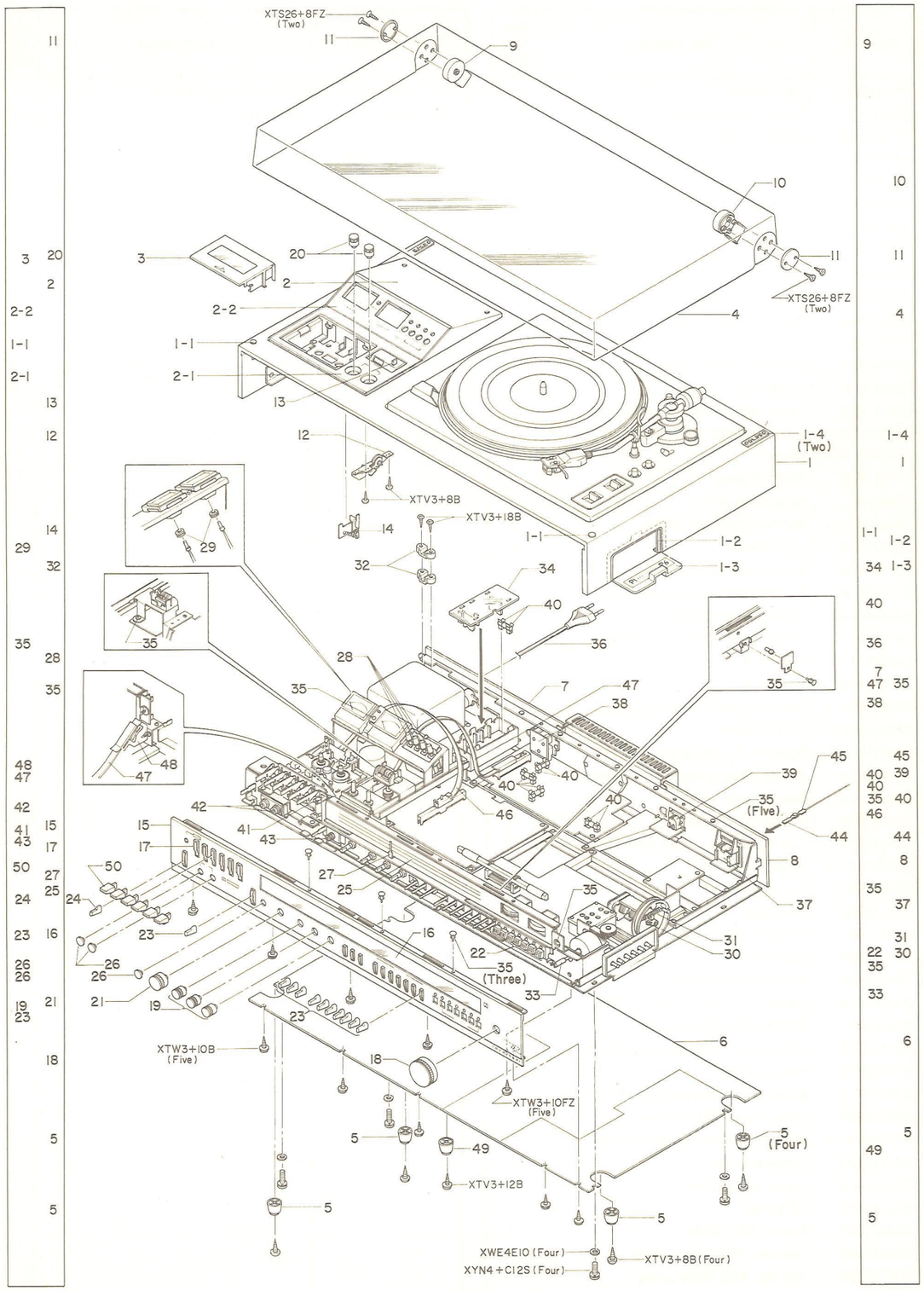
Ref. No.	Part No.	Description	Per Set (pcs.)
C430	ECEA1HS100	10μF 50V	1
C431	ECEA1ES101	100μF 25V	1
C432	ECEA1CS221	220μF 16V	1
C433,434	ECSF35ER22T	0.22μF 35V	2
C435,436	ECSF35E1T	1μF 35V	2
C437,438	ECSF35ER68T	0.68μF 35V	2
C439,440	ECEA1HS100	10μF 50V	2
C441,442	ECQM1H472MZ	0.0047μF 50V	2
C443,444	ECSF35ER1T	0.1μF 35V	2
C445,446	ECQM1H393MZ	0.039μF 50V	2
C447,448	ECQM1H473MZ	0.047μF 50V	2
C449,450	ECQM1H103MZ	0.01μF 50V	2
C451	ECEA 1HS100	10μF 50V	1
C452	ECEA1ES470	47μF 25V	1
C453,454	ECSF35ER22T	0.22μF 35V	2
C501,502	ECEA2AS010	1μF 100V	2
C503,504	ECKD1H102ZF	0.001μF 50V	2
C505,506	ECEA2AS010	1μF 100V	2
C507,508	ECSF35ER1T	0.1μF 35V	2
C509,510	ECEA50M4R7	4.7μF 50V	2
C511,512	ECQM1H472MZ	0.0047μF 50V	2
C513,514	ECQM1H683MZ	0.068μF 50V	2
C515,516	ECQM1H683MZ	0.068μF 50V	2
C517,518	ECQM1H182MZ	0.0018μF 50V	2
C519,520	ECEA1HS100	10μF 50V	2
C521,522	ECEA2AS010	1μF 100V	2
C523,524	ECEA1AS101	100μF 10V	2
C525,526	ECSF35ER22T	0.22μF 35V	2
C527,528	ECQM1H182MZ	0.0018μF 50V	2
C529,530	ECSF35ER47T	0.47μF 35V	2
C531,532	ECKD1H102ZF	0.001μF 50V	2
C533,534	ECEA1HS100	10μF 50V	2
C535,536	ECEA1HS100	10μF 50V	2
C537,538	ECEA1ES470	47μF 25V	2
C539	ECEA1ES470	47μF 25V	1
C540	ECEA1ES101	100pF 25V	1
C541	ECEA1VS330	33μF 35V	1
C601,602	ECEA1AS470	47μF 10V	2
C603,604	ECKD1H102ZF	0.001μF 50V	2
C605,606	ECFD1E333MD	0.033μF 25V	2
C607,608	ECFD1E103MD	0.01μF 25V	2
C609,610	ECEA1CS330	33μF 16V	2
C611,612	ECEA2AS010	1μF 100V	2
C613,614	ECEA1ES101	100μF 25V	2
C615,616	ECKD1H102ZF	0.001μF 50V	2
C701,702	ECEA2AS010	1μF 100V	2
C703,704	ECKD1H102ZF	0.001μF 50V	2
C705,706	ECEA1AS101	100μF 10V	2
C707,708	ECCD1H070D	7μF 50V	2
C709,710	ECEA1HS470	47μF 50V	2
C711,712	ECQM1H473MZ	0.047μF 50V	2
C713	ECEA1VS101	100μF 35V	1
C714	ECEA1VS221	220μF 35V	1
C715,716	ECKD1H102KB	0.001μF 50V	2

REPLACEMENT PARTS LIST

Ref. No.	Part No.	Description	Per Set (pcs.)
C801	ECEA1CS221	220μF 16V	1
C802	ECEA1CS471	470μF 16V	1
C803	ECSF35ER1T	0.1μF 35V	1
C804	ECQS1182JZ	1800pF 125V	1
C805	ECQS1471JZ	470pF 125V	1
C806	ECSF35ER1T	0.1μF 35V	1
C807	ECEA1HS100	10μF 50V	1
C808	ECQM1H333MZ	0.033μF 50V	1
C809	ECQM1H683MZ	0.068μF 50V	1
C810	ECQM1H104KZ	0.1μF 50V	1
C811,812	ECKD1H331KB	330pF 50V	2
C813,814	ECEA1AS221	220μF 10V	2
C815,816	ECEA1HS100	10μF 50V	2
C817,818	ECEA1HS100	10μF 50V	2
C819,820	ECQS1562JZ	5600pF 125V	2
C821,822	ECQS1472JZ	4700pF 125V	2
C823,824	ECQM1H273FZ	0.027μF 50V	2
C825,826	ECEA1HS100	10μF 50V	2
C827,828	ECEA1HS100	10μF 50V	2
C829,830	ECQM1H473JZ	0.047μF 50V	2
C831,832	ECSF35ER1T	0.1μF 35V	2
C833,834	ECSF35ER33T	0.33μF 35V	2
C835,836	ECSF35ER68T	0.68μF 35V	2
C837	ECEA1ES101	100μF 20V	1
C838	ECEA1ES470	47μF 25V	1
C839,840	ECEA1ES101	100μF 25V	2
C841	ECEA1AS221	220μF 10V	1
C842	ECKD1H103ZF	0.01μF 50V	1
C851	ECEA25N10	10μF 25V	1
C852	ECKD1H103ZF	0.01μF 50V	1
C853	ECEA2AS2R2	2.2μF 100V	1
C901	ECET25R682SW	6800μF 25V	1
C902	ECEA2AS010	1μF 100V	1
C903	ECEA1VS102	100μF 35V	1
C904	ECET35R222SW	2200μF 35V	1
C905,906	ECET35R472SW	4700μF 35V	2
C910,911 S	ECKDHS101MB	100μF 400V	2
C913	ECEA2AS010	1μF 100V	1
C914	ECEA1ES471	470μF 25V	1
C921	ECEA1ES221	220μF 25V	1
C922	ECEA1ES101	100μF 25V	1
CAPACITORS (PLAYER)			
C651	ECEA1ES101	100μF 25V	1
C652	ECEA1HS010	1μF 50V	1
C653	ECEA1CS101	100μF 16V	1
C654	ECEA1ES471	470μF 25V	1

Ref. No.	Part No.	Description	Per Set (pcs.)

PARTS LOCATION OF CABINET AND CHASSIS

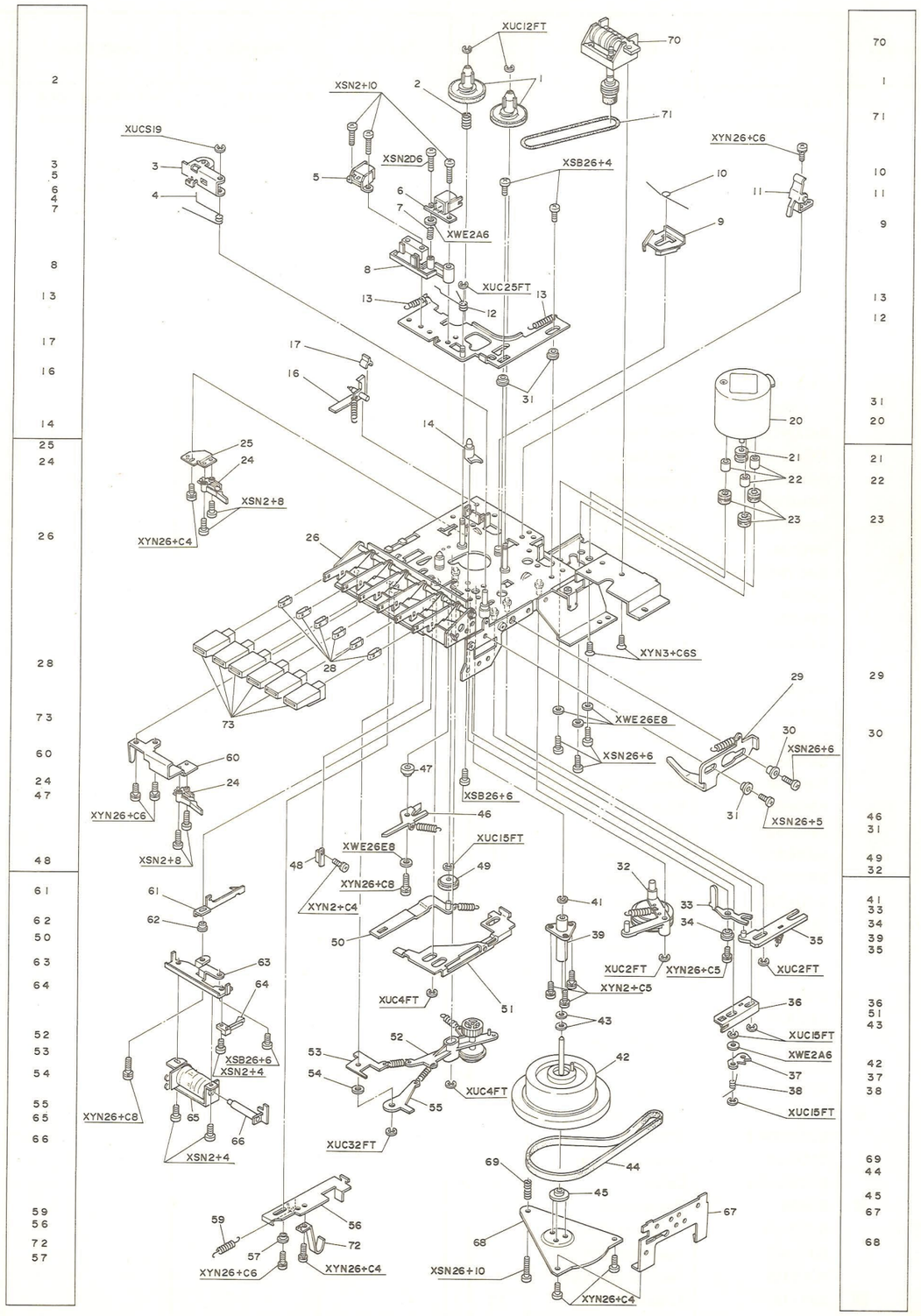


REPLACEMENT PARTS LIST OF CABINET AND CHASSIS

Ref. No.		Part No.	Description	Per Set (pcs.)
1		SKA2560	Cabinet Ass'y	1
1-1		(SHG9058-1)	Dust Cover, Rubber	(2)
1-2		(SKE316)	Holder, Volume Lid	(1)
1-3		(SYE512)	Volume, Lid Ass'y	(1)
1-4		(SBH9066)	Holder, Hinge	(2)
2		SYE576	Cassette Cover Ass'y	1
2-1		(SGX1092)	Ornament, Cassette Cover A	(1)
2-2		(SGX1094)	Ornament, Cassette Cover B	(1)
3		SYE564	Cassette Lid Ass'y	1
4		SGE856	Dust Cover	1
5		SYL6-1	Foor Ass'y A	4
6		SYU350	Bottom Board Ass'y	1
7		SKU3420	Rear Board A	1
8		SKU3440	Rear Board B	1
9		SBH9036	Hinge, Left	1
10		SBH9038	Hinge, Right	1
11		SBH9040	Cap	2
12		SXE134	Eject Arm Ass'y	1
13		SBC190-1	Rest Button	1
14		SXE88	Hook Ass'y	1
15		SYP378	Escutcheon Ass'y	1
		SYP378-1	Escutcheon Ass'y (for Austria, German)	1
16		SGE858	Transparent Cover	1
17		SGE844	Button Cover	1
18		SBN834	Knob, Tuning	1
19		SBN836	Knob A, Volume	3
20		SBN844	Knob, Rec	2
21		SBN838	Knob B, Volume	1
22		SWE182	Sensor Ass'y	1
23		SBN830	Knob, Lever	11
24		SBN832	Knob, Power	1
25		SKD4220	Dial Scale	1
		SKD4222	Dial Scale (for Austria, German)	1
26		SUV122	Headphone Jack Cover	3
27		SDP1010	Dial Pointer	1
28		SBC302	Button, Push	4
29		SHG9100	Lamp Rubber	2
30		SDD46K	Dial Drum	1
31		RDS4170A	Spring	1
32	S	SHR134	Power Cord Lamp	1
33		SDT9304-1	Shaft, Tuning	1
34		SMX136-1	Insulator Cover	1
35		RHR969ZA	Latch	12
36	S	SJA88	Power Cord	1
37		SJS9408	Terminal, DIN Ant	1
38		SJF9408	Terminal, DIN SP	1
39		SJF9102	Terminal, DIN 5P	1
40	S	SJF110	Fuse Holder	10
41	S	SJF106-1	Lamp Holder	1

Ref. No.	Part No.	Description	Per Set (pcs.)
42	XCJ6P21A	Jack, Microphone	2
43	XCJS6PF6	Jack, Head phone	1
44	SJT708	FM Line Ant Pin A	1
45	SJT208	FM Line Ant Pin B	1
46	ESA2056	Remote Wire Ass'y	1
47	ESA20815B	Remote Wire Ass'y	1
48	ESA255	Remote Wire Selector	1
49	SYL-8	Foot Ass'y B	1
50	SBC296	Button, Push	6

EXPLODED VIEW OF CASSETTE TAPE DECK (SJD526)

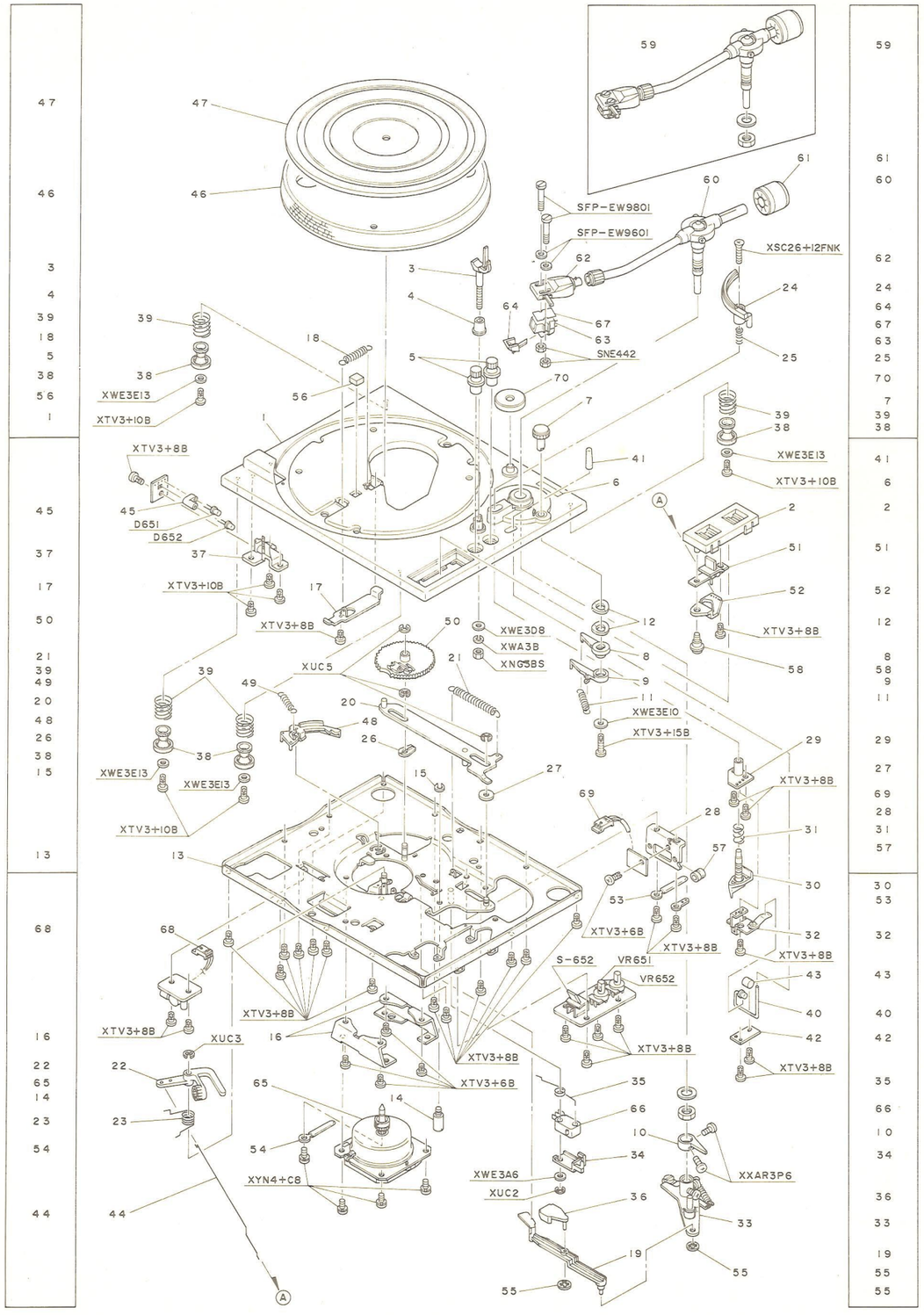


REPLACEMENT PARTS LIST OF CASSETTE TAPE DECK (SJD526)

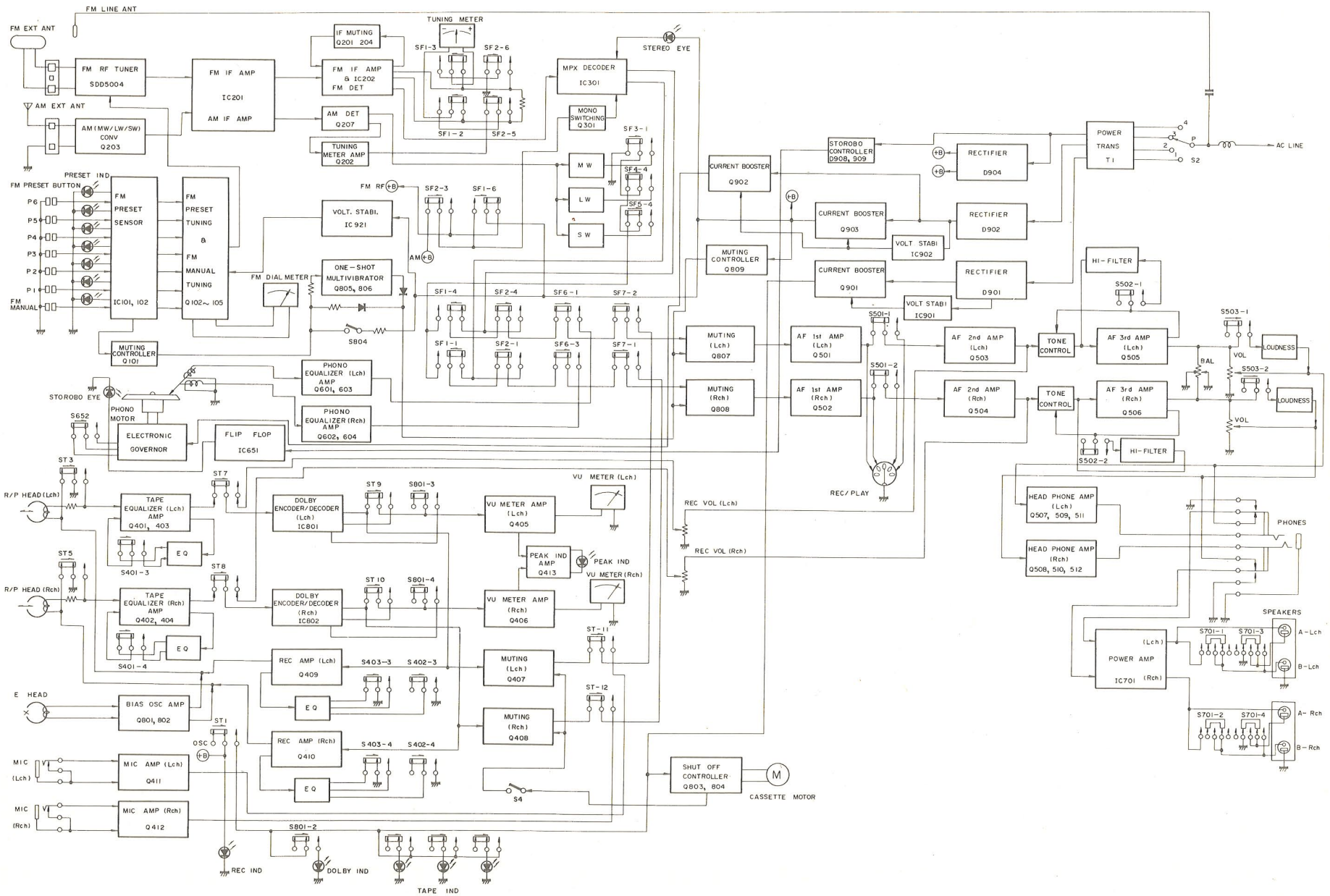
Ref. No.	Part No.	Description	Per Set (pcs.)
1	SMQ1626	Reel Table	2
2	SMQ462	Spring, Supply Reel	1
3	SMQ1658	Pressure Roller Assembly	1
4	SMQ1660	Spring, Pressure Roller	1
5	SJH14	Erase Head	1
6	SJH30	R/P Head	1
7	SMQ678	Spring, R/P Head	1
8	SMQ1362-1	Head Base	1
9	SMQ1354	Brake Arm	1
10	SMQ1358	Spring, Brake Arm	1
11	SMQ1818	Spring, Tape Holder	1
12	SMQ1444	Spring B, Head Panel	1
13	SMQ1360	Spring A, Head Panel	1
14	SMQ1690	Guide Pin	1
16	SMQ1232	Lever, REC Safety with Spring	1
17	SMQ1706	Stopper, REC Safety Lever	1
20	MMX5A2RSA	Motor	1
21	SMQ1662	Motor Pulley	1
22	SMQ718	Spacer, Motor	3
23	SMQ716	Rubber Cushion, Motor	3
24	SMQ1664	Leaf Switch	2
25	SMQ1666	Bracket, Motor Switch	1
26	SMQ2044	Push button Frame Assembly	1
28	SMQ1868	Spring, Push Button	6
29	SMQ2040	Lever, Eject slide with Spring	1
30	SMQ1374	Spacer A	1
31	SMQ1398	Spacer B	3
32	SMQ1672-1	Clutch Assembly with Spring	1
33	SMQ1410	Pause Lever	1
34	SMQ1412	Spacer, Pause Lever	1
35	SMQ1414	Pause Slide Lever A with Spring	1
36	SMQ1416	Pause Slide Lever B	1
37	SMQ1376	Pause Click Lever	1
38	SMQ1418	Spring, Pause Click Lever	1
39	SMQ1674-1	Shaft, Flywheel	1
41	SMQ1682	Nylon Washer	1
42	SMQ2052	Flywheel	1
43	SMQ148	Washer, Oil Thrower	2
44	SMQ1688	Belt, Main	1
45	SMQ1680	Thrust Pad, Flywheel	1
46	SMQ1436-1	Lever, Auto Stop Drive withSpring	1
47	SMQ1684	Spacer, Auto Stop Lever	1
48	SMQ1670	Operating Plate, Muting Switch	1
49	SMQ1386	Rewind Idler	1
50	SMQ1408	Rewind Arm Assembly with Spring	1
51	SMQ1406	Operation Plate, Brake	1
52	SMQ1382-1	FF Arm Assembly with Spring	1
53	SMQ1430	Rewind Lever	1
54	SMQ1434	Nylon Washer ϕ6.1	1
55	SMQ1432	FF Lever	1
56	SMQ1650	Lever, REC Slide	1
57	SMQ1426	Spacer, REC Slide Lever	1
59	SMQ1638	Spring, REC Slide Lever	1

Ref. No.	Part No.	Description	Per Set (pcs.)
60	SMQ1668	Braket, Muting Switch	1
61	SMQ1530-1	Play Lever	1
62	SMQ1524	Spacer, Play Lever	1
63	SMQ1696	Bracket, Solenoid	1
64	SMQ1698	Pause Switch	1
65	SMQ1692	Solenoid Assembly	1
66	SMQ1694	Shaft, Solenoid	1
67	SMQ2054	Flywheel Bracket A	1
68	SMQ2056	Flywheel Bracket B	1
69	SMQ678	Spring, Retainer	1
70	SMQ1966-1	Tape Counter	1
71	SMQ1988	Counter Belt	1
72	SUS208-1	Spring Plate, REC Switch	1
73	SBC296	Push Button	6

EXPLODED VIEW OF RECORD PLAYER (SP523A)



REPLACEMENT PARTS LIST OF RECORD PLAYER (SP523A)

Ref. No.	Part No.	Description	Per Set (pcs.)
1	SJY1018	Player Board	1
2	SJY9316	Switch Board	1
3	SJY76-1	Arm Rest Assembly	1
4	SJY5106	Ornament, Arm Rest	1
5	SJY130	Knob Assemby, Adj	2
6	SQX9788	Label	1
7	SJY122-1	Knob Assembly, Ant Skate	1
8	SJY9324	Skate Lever A	1
9	SJY9326	Skate Lever B	1
10	SJY9494	Skate Lever C	1
11	SJY9330	Skate Lever Spring A	1
12	SFXW831-5	Washer	2
13	SJY150	Player Panel Assembly	1
14	SJY9478	Eccentric Pin	1
15	SFXW140-01	Clip	1
16	SJY9438	Motor Angle	2
17	SJY9434	Reset Lever	1
18	SJY9064	Spring	1
19	SJY9440	Activating Plate	1
20	SJY138	Operating Plate	1
21	SJY9062	Spring, Operating	1
22	SJY9548	Reject Arm	1
23	SJY9266	Spring,Reject Arm	1
24	SJY5100	Lift	1
25	SJY9228	Spring A, Lift	1
26	SJY5088	Spacer A	1
27	SJY5090	Spacer B	1
28	SJY9510	Bracket, Terminal Board	1
29	SJY148	Lift Assembly	1
30	SJY5084	Lift Shaft	1
31	SJY9532	Spring, Lift	1
32	SJY142	Cueing Assembly	1
33	SJY136	Restor Lever Assembly	1
34	SJY5104	Switch Cover	1
35	SJY9498	Spring, Switch Cover	1
36	SJY9044	Switch, Stop Plate	1
37	SJY9490	Strobo Cover	1
38	SJY5098	Foot	4
39	SJY9492	Spring, Player Board	4
40	SJY144	Cue Lever Assembly	1
41	SJY5050	Knob, Cue	1
42	SJY9430	Bracket, Cue Lever	1
43	SJY9258	Cue Rubber	1
44	SJY9482	Spring, Stop	1
45	SJY5108	Storobo Spacer	1
46	SJY3016	Turntable	1
47	SFTG120-01	Turntable Sheet	1
48	SJY9528	Stop Lever	1
49	SJY9222	Spring, Stop	1
50	SJY170	Main Gear Assembly	1
51	SJY158	Lut Lever Assembly	1
52	SJY9344	Cut Plate	1
53	SHE36-3	Clamp	1
54	SHE84	Clamp	1
55	SNE428	Push Nut	2
56	SHG916	Rubber A	1
57	RHG3-1	Rubber B	1
58	SJY9346	Screw	1
59	EPU614MDD	Pickup Assembly with Cartridge, Stylus	1
60	SJY104-2	Tone Arm Assembly without Weight	1
61	SJY102-1	Weight Assembly	1
62	SFPCC3501K	Shell Assembly with Cartridge, Stylus	1
63	EPC270C-X	Cartridge with Stylus	1
64	EPS270ED	Stylus	1
65	DCL5090	Motor Assembly	1
66	AH74503	Micro Switch	1
67	SJY9518	Spacer	1
68	SWK484	Connector with Lead	1
69	SWK368	Connector with Lead	1
70	SJY5018	45 r.p.m. Adapter	1

BLOCK DIAGRAM